DOCUMENT RESUME

ED 146 157 95 SP 011 863

AUTHOR Morine, Greta; Vallance, Elizabeth
TITLE A Study of Teacher and Pupil Perceptions of Classroom Interaction. Special Study B. Beginning Teacher Evaluation Study. Technical Report No. 75-11-6.
INSTITUTION Far West Lab. for Educational Research and Development, San Francisco, Calif.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE Nov 75
NOTE 287p.; For related document, see SP011 866

EDRS PRICE MF-$0.83 HC-$15.39 Plus Postage.
DESCRIPTORS Classroom Observation Techniques; Classroom Research; Cognitive Development; Educational Psychology; *Effective Teaching; *Interaction Process Analysis; Learning Processes; Observational Learning; *Performance Factors; Student Attitudes; Student Behavior; Student Teacher Relationship; Teacher Attitudes; *Teacher Behavior; *Teaching Styles

ABSTRACT

Teachers were designated as more and less effective according to their ability to teach specially constructed reading and mathematics curriculum units over two weeks. They were then studied to determine if their perceptions of classroom interaction and interactive decision making were different. They were also studied to determine whether they notice different aspects of teaching when viewing instruction by another teacher. Pupils were also studied to determine what aspects of instruction were salient to them. Four variables related to the teachers' thinking about instruction were found worthy of further study. These were the teachers' (a) logical/critical thinking; (b) comparative thinking; (c) negative thinking, and (d) amount of input accepted or sought during interactive decision making. In particular, teachers with high pupil gain scores tended to emphasize cognitive aspects of the lesson more, while teachers with low pupil gain scores gave slightly more attention to affective aspects of the lesson. The most salient instructional characteristics for students were cognitive events, not affective events. (Author/JD)

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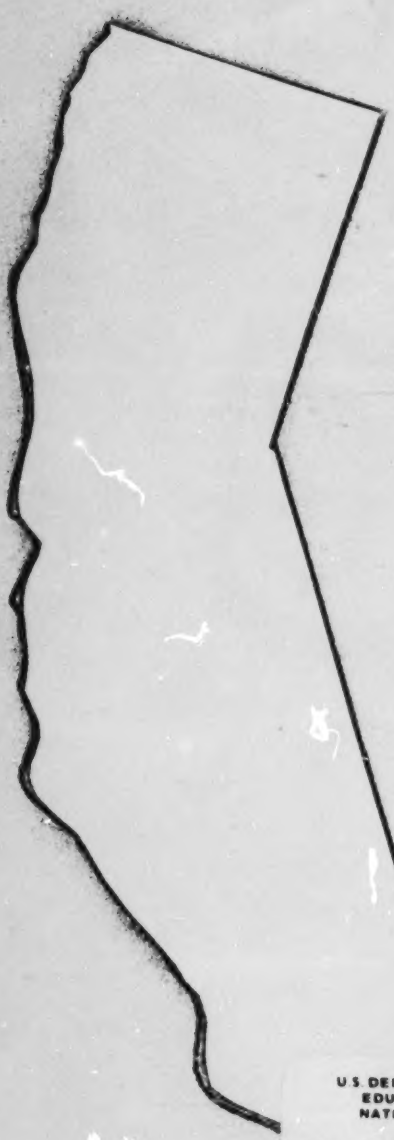

BTES

BEGINNING TEACHER EVALUATION STUDY

Technical Report Series

Technical Report 75-11-6

Special Study B:

A Study of Teacher and Pupil Perceptions of Classroom Interaction

Greta Morine
Elizabeth Vallance

November, 1975

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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FOR EDUCATIONAL RESEARCH AND DEVELOPMENT
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Special Study B

A STUDY OF TEACHER AND PUPIL PERCEPTIONS OF CLASSROOM INTERACTION

by

Greta Morine

with the assistance of

Elizabeth Vallance
Faye Mueller
Diane McIntyre
Lisa Hunter
Len Cahen
Devin Hess
Janet Weyrick

Submitted to

California Commission for Teacher Preparation and Licensing
1020 O Street
Sacramento, Ca. 95814

October 1, 1975

Far West Laboratory for Educational
Research and Development
1855 Folsom Street
San Francisco, Ca. 94103

PREFACE

This is one of a series of reports by the Far West Laboratory for Educational Research and Development concerned with the study of teacher effectiveness. Under contract to the California Commission for Teacher Preparation and Licensing, with funding provided by the National Institute of Education, the Laboratory is studying teachers in second and fifth grade classes in order to identify teacher behavior and classroom qualities that are related to reading and mathematics achievement.

The California Commission is the agency charged with certifying the appropriateness of teacher training programs throughout the State. To carry out its duties the Commission needs information about what teacher behaviors are related to student outcomes. This information will then be used jointly by the Commission and the State institutions that it certifies in order to better insure that beginning teachers receive training in areas that have been empirically demonstrated to affect student learning. To obtain the information they need, the Commission has undertaken a multi-year research effort titled the Beginning Teacher Evaluation Study (BTES).

In this report the research team headed by Dr. Morine analyzed the classrooms of a specially selected sample of teachers. These forty teachers were chosen because they varied in their measured effectiveness as teachers. The procedure used in selecting these teachers is important to understand because it affects the interpretation of the data presented and restricts the generalizability of the findings reported in this document.

Two-hundred teachers were recruited from thirteen school districts in the State of California. Half were second grade teachers and half were fifth grade teachers. Each teacher taught two Experimental Teaching Units

(ETUs) of two weeks duration each. The second grade ETU in reading centered on using word structure as a tool for comprehension; reading for comprehension in context; following directions and sequencing. The second grade ETU in mathematics focused on the concept of measurement (conservation) and the arithmetic operations pertaining to it. The fifth grade ETU in reading focused on reading in larger units (phrases, sentences, paragraphs). The fifth grade ETU in mathematics centered on the concept of probability and the arithmetic operations pertaining to the unit.

Each ETU included an introduction to the teacher giving a rationale for the unit; performance objectives that were tied to the tests for the unit; pretests for the students; instructional materials and activities for the teacher to choose from; and a posttest for students. The ETUs conformed to accepted State curriculum objectives for grades two and five, but were in areas not ordinarily stressed by teachers in those grades. In the second grade, instruction took about twenty minutes a day for two weeks, and in the fifth grade instruction took about forty-five minutes a day for two weeks. The ETUs were administered sequentially.

After the test data were collected, classroom posttest scores were regressed on pretest scores for each ETU, separately for each grade level. Based on class pretest means three strata were created so that the regressions were run separately for low, middle and high achieving classrooms within subject matter area and grade level. From the initial sample of one hundred teachers at each grade level, ten classrooms with high residual gain scores in reading, mathematics, or both areas, were chosen. Ten classrooms with low residual gain scores in reading, mathematics, or both areas,

were also chosen. These classrooms came from all three pretest strata. The ten teachers with classrooms that showed higher than predicted post-test means were designated as "more effective" teachers. The ten teachers associated with classrooms that showed lower than predicted posttest means were designated as "less effective" teachers. It must be noted that these designations are relative and that the teachers in this study were a volunteer sample. Our procedures can only allow us to talk of more and less effective teachers, as measured in the manner described, and in no way implies that these teachers are "good" or "bad" in their regular classroom performance.

The ETUs and associated tests were designed to identify a sample of teachers who varied in measured effectiveness when teaching a common curriculum, to common objectives, for controlled amounts of time. On the basis of residual gain scores over the two weeks of teaching in each ETU, ten more and ten less effective teachers at each grade level were identified and constituted the Known Sample of teachers that were used for intensive analysis of classroom practice. (For more complete data about this sample, see Berliner, D., Developing a sample of teachers for intensive analysis of classroom teaching. San Francisco: Far West Laboratory for Educational Research and Development; Beginning Teacher Evaluation Study, 1975 [in press].)

This report describes one of three separate studies of these specially selected classrooms. As in other documents of the Far West Laboratory the views presented in this report are not necessarily endorsed either by the Commission on Teacher Preparation and Licensing or the National Institute of Education. Clearly the data to be presented is restricted in generaliz-

ability due to the methods used for teacher selection and the volunteer nature of the sample. Our findings describe teaching behaviors and classroom characteristics which differentiate more and less effective teachers. But before these data are accepted as trustworty, *confirmation by other researchers, and replication by our own staff, is mandatory.*

This unusual research effort applied new methodology and required the thinking and efforts of many people. We wish to express gratitude to the following for their creativity, their time, and especially for their interest in making this study a success: to the California Commission for Teacher Preparation and Licensing's subcommittee on Evaluation of Teaching and to Dr. Marjorie Powell of the Commission staff for their advice and encouragement; to the forty teachers and their classrooms which comprised the Known Sample for volunteering to participate in the study and for allowing interviews during their busy classroom schedule.

Special thanks are due those people who individually helped to shape the study by sharing the benefits of their experience and by giving so generously of their time and, most importantly, their ideas: to Elizabeth Vallance who helped on the literature review, basic design and interviewing; to Faye Mueller and Diane McIntyre for their sensitivity as interviewers and data coders; to Lisa Hunter for her coordination of field activities; to Len Cahen and Devin Hess for help with data analysis; and Janet Weyrick for secretarial help.

And most of all, for thoughtfulness and creativity, Dr. Greta Morine deserves commendation. Her leadership made this complex study manageable,

and her interpretations of the data provided leads for further research on teacher and pupil perceptions of classroom interaction.

David C. Berliner
Principal Investigator
Beginning Teacher Evaluation Study
October 1, 1975

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CHAPTER ONE

Introduction

Classroom interaction can be viewed from a variety of perspectives. It is this fact that has given rise to the rich multiplicity of category systems through which educational researchers have studied the classroom.

This study grows out of the belief that teachers and pupils provide another rich source of alternative perspectives for viewing classroom interaction. As the people most intimately concerned with the interaction process, they provide a source that needs to be tapped more deeply. The findings of this study demonstrate what we knew from the beginning -- that this is only a preliminary tilt with the "windmills of the minds" of teachers and pupils. But they also confirm what we strongly suspected - that there is solid, interesting substance to be met there, not just empty air.

The responses of teachers and pupils to this initial foray lend support to the contention that a search for new variables in the study of teacher effectiveness can be both stimulating and productive. Two lines of further research appear to be promising. One relates to the thinking processes used by teachers and pupils as they reflect on classroom interaction. The other relates to the focus of attention that teachers and pupils have as they participate in the instructional process. This report will delineate the findings that point to these new directions for research.

Objectives of the Study

The specific goals of this study of teacher and pupil perceptions of classroom interaction ("Special Study B") are:

1. to identify the types of observations teachers make about pupils during the course of classroom interaction
2. to compare teachers who differ in pupil gain scores and in their style of teaching, in terms of the kinds of observations they make about pupils during the course of classroom interaction
3. to identify the types of judgments teachers make about appropriateness of events when they observe other teachers engaged in classroom interaction
4. to compare teachers who differ in pupil gain scores, and in their style of teaching, in terms of the types of judgments of appropriateness they make when they observe teachers engaged in classroom interaction
5. to identify the types of observations pupils make about teachers during the course of classroom interaction
6. to compare pupils of different grade levels and achievement levels in terms of the types of observations they make about teachers
7. to propose new variables for further study in teaching effectiveness research

To date, most teaching effectiveness research has concentrated on relating teaching transactions and pupil outcomes. As outside observers of the teaching-learning process, educational researchers have worked at refining their perceptions of classroom interaction, and defining variables that can be reliably measured. In an effort to identify some new and promising variables for further research, this study probes the perceptions of the participants in the teaching-learning act -- the teachers and the pupils.

One focus of this study is on teacher decision-making in classroom interaction, an area that has not been so thoroughly studied. We assume

that teaching behavior is based, at least in part, upon conscious decisions that teachers make as they work with pupils. We assume further that these decisions are based, at least in part, upon the types of information that teachers collect during classroom interaction, that is, the kinds of things that they perceive about pupils, and upon their judgments of what teaching moves are appropriate or inappropriate in specific situations. It seems probable that different kinds of information and different ideas of appropriateness lead to different kinds of decisions about the next best "move," and that some kinds of decisions or moves are more productive of pupil learning than others. For these reasons, data on teacher perceptions, judgments, and decisions during classroom interaction may provide a new perspective of teaching behavior. This "practitioners' perspective" should be very useful in helping to identify new and promising variables for further research on teaching effectiveness.

Another focus of the study highlights the other half of the teaching-learning team, the pupil, who is also presumably collecting information in the course of classroom interaction. Not all of this is information about the subject matter of the lesson. We assume that pupil behavior is based, at least in part, upon pupils' interpretations of their observations of teachers. This study has considered both pupil observations and pupil interpretations with the expectation of uncovering a "pupil perspective" of teaching behavior that may lead to identification of new variables.

The basic questions asked in this study are:

1. What types of things do teachers perceive about pupils during classroom interaction? How do pupils perceive themselves? Can teachers and pupils be differentiated on this basis? If so, are these teacher and pupil differences related to teacher differences in pupil gain scores and in teaching style?

2. What types of interactive decisions are teachers aware of making? What types of information do they consider in making these decisions? What types of interactive decisions do they identify as important or critical to the success of a lesson? Can teachers be differentiated on this basis? If so, are these differences related to teacher differences in pupil gain scores and in teaching style?

3. What types of things do teachers perceive when they observe other teachers engaged in classroom interaction? What judgments do they make about appropriateness of teaching moves in various types of situations? On what do they base these judgments? Can teachers be differentiated on this basis? If so, are these differences related to teacher differences in pupil gain scores and in teaching style?

4. What kinds of teaching behavior are salient to pupils? How do pupils interpret or conceptualize this behavior? Can pupils be differentiated on this basis? If so, are these differences related to pupil achievement and/or grade level?

5. How does the practitioner-pupil perspective of teaching behavior differ from the "outside" perspective established in previous research on teaching effectiveness? What new concepts or variables can be identified for further study?

The first four sets of questions form the guidelines for the research design itself. The fifth describes the context in which the findings of the study will be evaluated.

CHAPTER TWO

Literature Review

An examination of the very wide-ranging and diverse literature relevant to teacher and pupil perceptions of classroom interaction and the instructional process suggests several methodological and conceptual approaches to identifying variables related to teaching effectiveness. These approaches cluster into two major categories: A) studies directly related to interpersonal perception and to the information on which it is based, and B) studies on the learning climate related to teacher-pupil perceptions. Of these, the first group responds most directly to our concerns and seems to be the richest source of new variables; we will be focusing on this group primarily. The second group provides supplementary material indicating what some of the effects of these variables might be and providing a perspective for understanding them while we are attempting to refine them. Studies on the characteristics of (good and poor) teaching will only be briefly mentioned in this review. They represent the enormous backlog of information and variables already reported in the body of educational research; they indicate the behavioral, attitudinal and socio-educational dimensions of teacher variability, but their relevance to the specific concerns of this study is minimal.

The studies grouped within each category break down as follows:

A. Studies on perception and perceptual information

1) teacher as "information-processor"
2) research on "person perception" in psychology and educational psychology
3) attribution theory and its implications for the classroom

B. The learning climate as related to teacher-pupil perceptions

1) research on teacher expectations and their effects
2) research on teacher and pupil perception of classroom patterns (including "classroom climate" research)

The above list of categories of approaches to research on teaching is by no means complete. But these appear to be some of the most useful avenues for approaching the identification of new and interesting variables related to perceptions of classroom interaction, and this review will focus primarily on these. References in other categories will be cited in cases where they seem to substantiate or supplement arguments deriving from these major categories.

Studies on Perception and Perceptual Information

There are several alternative theoretical approaches to the study of perceptions. The three approaches that are most relevant to teacher and pupil perceptions are reviewed here.

Teacher as information-processor: "process ability" as a perception measure. The dimension which Schroder, Karlins and Phares (1973) (among others) refer to as "process ability" or "information-processing skills" is particularly relevant to the study of teacher perceptions of classroom interaction. Closely related to the Piagetian and Taba notions of the concept-formation process and to techniques developed by them to study this process (Taba, 1966), process ability refers to the quality of information used by persons in responding to their environment and to the ways in which this information is organized in arriving at understandings. The Schroder et al. work draws on a considerable body of research on information-processing from the fields of both psychology and education. The main points of the argument, and their implications for Study B are summarized below:

"According to our theory individuals with well developed information-processing skills have...a greater number of perceptual categories for receiving information about the world, and more combinatory rules or concepts for organizing such units of information" (Schroder et al., 1973). Information-processing skills are related to the process of concept formation and utilization. In "process learning," as an educational model, the accent is on the learner's acquiring an ability to generate his or her own concepts, selecting information and combining it as the situation demands. The mature information processor is an active learner -- he or she explores actively, seeks out new information, is able to organize bits of information from several different vantage points, is flexible and open to new information (and can adapt behavior to new patterns accordingly), is sensitive to changes in the environment, and makes "complex value judgments" (p. 27). Such a person has "many degrees of freedom in dealing with the world", is an active manipulator of the environment, generates his or her own rules for dealing with problems, is "adaptive and flexible in the face of change and uncertainty" (p. 28) and can process alternative explanations of an event by utilizing complex and often discrepant information.

A person lacking mature information-processing skills, on the other hand, operates under simpler and more rigid rules. Such persons are unable to generate very diverse information about a subject (or to perceive very diverse characteristics of it), are often intolerant of ambiguity, dogmatic, and rigid; they depend on externally defined rules and standardized, almost stereotypic, response cues, and can be inflexible in their attitudes and categorical in their thinking. They tend to assign information to established slots and to not attempt to re-organize the rules by which they

deal with particular kinds of situations. They tend to consistently seek out the same kinds of information in dealing with similar situations and to base their reactions on a limited set of data.

The characteristic to which these writers attach the label "process ability" or information-processing" has been extensively researched from other angles and under other names within the fields of cognitive and social psychology. Messick (1970) gives a comprehensive and coherent summary of these various approaches to cognitive style; his review emphasizes the importance of understanding individual differences in cognitive style (in both students and teachers) in evaluating the effects of different instuctional treatments. The closely related concerns treated in the Messick survey include: field independence and field dependence, breadth of categorizing, conceptualizing styles, cognitive complexity and simplicity, leveling and sharpening as styles in memory assimilation, and tolerance for incongruous or unrealistic experiences. The consistency of cognitive style across situations and in processing different kinds of information has been demonstrated in numerous laboratory and clinical studies. Messick argues strongly that these kinds of differences among students and among teachers should be considered in examining the effectiveness of different instructional materials and teaching styles.

Schroder illustrates the differences in information-processing levels by describing six hypothetical teachers who fall at various points along the continuum from low (unidimensional, categorical) to high (multidimensional and multiconceptual) process ability. A teacher at the low end of the continuum tends to react to only one or two categories of

information about a student -- e.g., low achievement -- and structures interactions with that student around this single attribute. Such a teacher engages in "categorical thinking" -- that is, he or she places the student in a single category ("poor student", or "low achiever") in making judgments. All other information about the child (such as, for example, social skills and mechanical abilities) are discounted as extraneous. A teacher at the high end of the scale combines or integrates two or more dimensions, interpreting one bit of information in light of others (e.g., that low grades and high mechanical ability might indicate that the child is "unchallenged" by the academic environment) or forming alternative concepts about the child and responding to him in different ways as the changing situation demands. "Multiple concept" teachers use more, and more relevant, information in dealing with students, and they are sensitive to changes in the students' behavior and needs.

Level of information-processing ability, and the different components of it, may be measured in several ways. The main dimension of the ability is the sheer amount of information people extract from their environment. Adapting techniques described by Schroder et al. to apply to teaching situations, a teacher might be shown a videotape of a teaching sequence (his/her own interaction with pupils) and then asked to list his or her observations about it. Or teachers might be asked to list the characteristics they consider important about each child in their class. This would provide a measure of how much information the teacher perceives. In both situations the teacher could then be asked to explain how he or she used the information to make decisions within the particular lesson, e.g., what information led to what teaching moves. This second step, reporting hypotheses, would indicate the

number and complexity of the rules by which the teacher interprets the situation, depending on how many categories of information are incorporated into each explanation and on how they are related to each other.

Specific measures important to process ability are the breadth of categories of information (the number and diversity of types of information referred to), the depth of information (the number of items or the amount of information considered in each category), and the number and range of hypotheses generated. Breadth and depth combine to yield a measure of "evenness" or balance across categories; the evenness score reflects the number of strong perceptual categories used by the teacher and presumably influences the number and quality of the explanatory concepts she or he is able to entertain. For example, a teacher referring to seven different physical-appearance attributes of a child and to only one non-academic skill is fairly unidimensional and would probably not be able to generate many alternative ways of accounting for the child's behavior (for example, explanations might refer mainly to the child's perceived SES level and to characteristics inferred from that). A teacher citing an equivalent depth of information in each of several categories would be seen as more capable of multidimensional thinking and would probably be able to combine these in different ways in trying to understand the child.

Another comprehensive study of the concept of teacher as information-processor was done by Ryans (1963). In this study, however, "information" was defined as "communicable facts, concepts and rules that possess meaning for the pupil" (p.278). Thus, the five activities involved in information processing are: 1) identifying and classifying inputs, 2) evaluating possible courses of action, 3) deciding what to do, 4) arranging the intended output,

and 5) communicating the information to pupils by appropriate channels. Of these five, only the first (identifying and classifying information) refers to the "process ability" discussed by Schroder et al.; the others focus on communicating the content of the lesson. Insofar as Ryans' conception of teacher as information-processing system is a model for explaining the teacher's planning for and executing the communication of subject matter content to pupils, his formulation is not applicable to understanding "process ability" in the sense that we mean it. But it does illustrate the role Schroder's process-ability may play in the larger sequence of the move from preactive to interactive teaching, and as such it may offer a conceptual and theoretical way of linking our studies on interactive teaching perceptions (Special Study B) and teacher planning (Special Study C). Also, if we use the above five-step sequence as a general model for responding (and not necessarily for communicating specific facts), it suggest one way of describing how the information so processed (in step #1) is used in making both preactive and interactive decisions in teaching. A review of studies in communication theory would be necessary in order to establish such a connection, but Ryans' view of the teacher as an information-processing system--and his exhaustive documentation of studies referring to the various constructs in this system -- adds credence to the possibility of approaching teaching from a process-ability standpoint.

Willis and Brophy (1974) have done some research related to the question of quality and quality of information used by teachers. They attempted to identify categories of information which teachers refer to in differentiating pupils towards whom they feel positive, negative, indifferent or concerned. This and other work on teachers' descriptions

of pupils may suggest some consistent categories of information which operate as variables in teachers' perception of pupils and of their responses. Sample categories include: physical appearance, verbal/oral ability, social skills, attitudes toward school, work habits, readiness for school, emotional characteristics, etc.

Some measures of process ability, then, suggested by or extrapolated from Schroder et al. (1973) may include: 1) show teachers a videotape of their own teaching and ask them to list their observations about it; 2) show a film of a teaching sequence and ask pupils to list their observations about it; 3) ask teachers to list the characteristics they consider important about each child in their class; 4) ask pupils to list things they have noticed about how teachers teach. All of these measures could indicate how much (the breadth and depth of) information both teachers and pupils extract from the interactive teaching situation. Possibly teachers might differentiate along this dimension. Having teachers (or pupils) form hypotheses to explain the person or situation they are describing would provide additional information about the diversity and complexity of the concepts or rules used by each in understanding the teaching act.

Relevant questions raised by the literature on process ability include: Do teachers differ in some logical way in their breadth/depth scores? Do teachers differ in the breadth/depth scores generated in interactive teaching as opposed to preactive (planning) situations? Do teachers differ in the types of information they collect in different teaching situations (does relevant information change from setting to setting, or remain constant)? If these types of differences exist, what other dimensions might be related to them -- experience? kind of training? effectiveness as measured by student outcome? other teacher characteristics such as

warmth, democratic/authoritarian classroom? nature of contacts with pupils (e.g. dominative/supportive)? How do teachers' perceptions -- and the amount and quality of information they use -- change over time? Do pupils differ in some consistent way in their breadth/depth scores? If so, is this related to age or academic achievement?

Research on "person perception" in psychology and educational psychology. The literature on "person perception" research, an approach that flourished in psychology and social psychology in the 1950's, is fairly extensive. Gage (1958), Gage (1953a; 1953b), Gage and Cronbach (1955), and Gage, Leavitt & Stone (1955) have produced a coherent body of studies relating person-perception theories to classroom teaching situations. Tagiuri (1969) has summarized this early work and related it to the then current perspectives in social psychology. This approach, particularly when considered in conjunction with attribution theory (to be reviewed below) may suggest some dimensions of interactive processes and offer some methodological clues as well. It is particularly intriguing for the light it may shed on some of the antecedents of the "Pygmalion effect" of teacher expectations (Rosenthal & Jacobson 1968). The variables influencing how people perceive others, which attributes they react to most immediately or most strongly, and how they perceive changes in others' behavior once initial expectations have been formed, are all logically related to the notion of teacher expectations. The more immediate relevance of this research for our purposes is the perspective it affords on the kinds of information used in making predictions about other people's needs, preferences, and abilities.

Full elaboration of this function of person-perception research, however, will depend on further work in the area. The literature we have looked at in this area does not provide much in the way of identifying different kinds of information used by teachers in predicting students' characteristics. Most of it is heavy with documentation of the preponderant effect of stereotypes in influencing people's reactions to others (Gage 1953a, Gage & Cronbach 1955). The challenge provided by this research is that of identifying what other kinds of information are important and their strength, relative to the strength of the "global disposition" or "perceived stereotype" effect, in understanding other people's behavior.

The work of Gage and his colleagues focused mainly on the accuracy of prediction -- accuracy of teachers' predictions of students' responses in specified situations. The research attempts to identify the types of information on which the more accurate predictions are based and in this way to identify which student attributes seem to be most significant in determining teachers' expectations of student behavior. Among the findings of this work are:

1) teachers' accuracy in prediction is greater when based on (stereotypic) knowledge of students' social category alone than when based on observation of actual behavior. Perception is determined more by the percipient's global reactions to general types than by behavioral cues ("The dominant role of global dispositions")(Gage & Cronbach 1955; Gage 1953a)

2) teachers' accuracy in predicting about cognitive, social and emotional aspects of their own students are unrelated to each other. Prediction in these three areas seems to involve three separate processes (Gage, Leavitt & Stone 1953)

3) teachers' accuracy in prediction of students' feelings about school correlates significantly with pupils' ratings of teachers' effectiveness in teacher-pupil relationships: "understanding" of pupils correlates .50 with success in getting along with them. (Gage, 1958).

4) when prediction in #3 above is expanded to refer to cognitive, emotional and social responses of pupils, this correlation breaks down. Accuracy of prediction in these three areas was not significantly related to pupils' ratings of teachers (Gage et al., 1953). The relationship between understanding of pupils and getting along with them is inconclusive.

Variables which seem to influence (positively or negatively) the accuracy of one person's (p) "perception" (or predictive accuracy) of another (o) include: 1) o's social category as told to p before meeting o; 2) o's social category as perceived by p (Gage, 1953a; 1953b); 3) the area in which p is asked to predict about o (Gage et al., 1955), 4) how well p knows o (members of the same group, or strangers) (Gage, 1953a); 5) the behavioral cues supplied by o (Gage, 1953a; 1953b).

In a study of predictive accuracy among clinicians (presumed to have expertise in empathic relations), predictive accuracy was found not to be related to: p's tendency to project, the similarity between p and o as perceived by p, or p's satisfaction with himself (Gage, 1953b).

Tagiuri's (1969) analysis of person-perception research reviews this early period of person perception research in social psychology, identifying some of its sources in earlier research on the perception of emotions (beginning with Darwin's writings) in the first decades of the century. The concern since the 1950's has been more with the "ability" to judge others than with emotional empathy -- with the process of person perception, its outcomes, or the veridicality of these outcomes. The early work which had identified the halo effect, logical error operation, and leniency effect in judging other persons has since been refined. Tagiuri's conclusions support the consistent findings reported here that differences in person perception exist mostly in the cognitive processes of the perceiver not in the specific perceptual stimuli of the object. This would appear to be

logically related to the findings in research on "cognitive style", to the effect that individuals perceive and conceptually organize an array of data in very different ways, but as Tagiuri emphasizes, there has been little systematic work done in relating person perception to other established theories in psychology.

Research related to person perception appears under the headings of: cognitive theories in social psychology (Zajonc, 1969), field theory (Deutsch, 1969), attitude change (McGuire, 1969), social motivation (Berkowitz, 1969) and communications theory (Hovland et al., 1953).

Techniques used in person-perception research usually compare predicted responses with the actual responses made by o. The kinds of responses being predicted referred variously to students' feelings about their school, to their personal taste in non-specifically school-related matters (selections from the Kuder Preference Record), to students' personal worries and concerns, and to students' performance on achievement-test items. Typically p makes his/her predictions by filling out a questionnaire as (s)he thinks o would respond. Another technique frequently used is the Q-sort, having o arrange a series of statements about him/herself into a specified number of piles according to the appropriateness of each statement as a self-description, and then having p arrange the same statements as (s)he thought o had done and as his/her "ideal person" would do. This latter comparison should identify discrepancies relevant to p's expectations of o.

Techniques used to vary the amount of information available to p about o include: 1) a "stereotype response" situation where the only information is a stereotypic label (e.g. "How would a typical fifth grader respond to

these questions?"); 2) a stereotype response with slightly more information (e.g. "How would a male undergraduate education major at this university respond?"); 3) presenting behavioral cues by having o perform a series of unrelated expressive behaviors (e.g. drawing a figure, building a house of cards) in front of p and then leaving the room; 4) having teachers predict the average response of their own class; 5) having teachers predict the responses of specific individual students.

The questions raised by person-perception research when applied to the teaching situation are numerous and probably more interesting than the very limited strand of results available from this search. Questions include: Given that teachers have certain stereotypic expectations of different kinds of students, what attributes of pupils contribute most strongly to these stereotyped responses? (Social-class attributes only? Achievement? Sex?) What if we supplied only one of these to teachers? What behavioral cues act most strongly in confounding these stereotyped expectations? In compounding them? Do teachers differentiate consistently in their degree of sensitivity to behavioral cues?(Given a set of expectations based on stereotypic information only, do different teachers then differ in their sensitivity to behavioral cues when working with the same actual students? Do some increase and some decrease in accuracy when specific cues are added?) Does this correlate with other distinctive characteristics of teachers (including effectiveness)? Do some teachers rely more on established images of students; do others process more interactive and behavioral-cue information in forming their perceptions? How closely do teacher perceptions of pupils relate to pupil self-perception? Are pupil expectations of teachers also stereotyped? If so, what are these

stereotypes? Are they related to pupil learning? In general, is predictive accuracy or accuracy of "perception" at all associated with effectiveness? How?

The results of this 20-year old body of person-perception studies are not conclusive. The effectiveness of stereotypy for the purposes of attitudinal prediction is fairly well established. The apparent fact that behavioral cues and specific stimuli confound the accuracy of these predictions has not to our knowledge been explained. The logical and conceptual connections between person-perception and teacher expectations are strong; the gap between interactive teaching and person perception may have to be breached if a link between classroom interaction, teacher perception, teacher behavior, and student outcome is to be established.

Attribution theory and its implications for the classroom. The psychological construct of "attribution theory", and educational research relating to it, is a third possible source for investigating both the background of teacher expectations and the nature of teachers' interactional responses to children. The usefulness of attribution theory becomes especially clear when we attempt to relate it also to variables suggested by both "process ability" research and studies of person-perception (see the above discussions). The former suggests that people differ in their ability and/or willingness to deal with unexpected or diverse information; the latter suggests that the information which people react most strongly to, in other people, focuses on those attributes which most determine the "global" impression projected by other people. Research in attribution theory indicates that initial and global impressions tend to be pervasive and enduring over time regardless of subsequent changes

in the other person's behavior (Johnson et al. 1964; Jones et al., 1971). Hovland et al.'s, (1953) research on the primary vs. recency effect in perception and in attribution of characteristics to others is related to some of these issues. Similarly, Tagiuri's (1969) review of research on the halo effect, leniency effect, and logical error in making judgments about others is closely related to the concerns of attribution theory as seen in Cahen's (1966) research on the halo effect. This area of research may suggest how these impressions may be formed in interactional situations where p (the teacher) has access to very ample, diverse and often conflicting kinds of information about o (the pupil). As such, attribution theory is another strong source of teacher-effectiveness variables.

Attribution theory makes the distinction between "origins" (persons who are able to originate and control their own decisions and activities) and "pawns" (persons whose actions are greatly influenced by other people). More specifically, it is concerned with people's perceptions of each other as either origins or pawns, and with the sources of these perceptions.

The theory is most thoroughly articulated by deCharms (1965) whose orientation is a social-psychological one; the theory can be applied to classroom situations, and has been by other researchers (Jones et al., 1971; Johnson et al., 1964; Beckman, 1970; 1973) as well as by deCharms (1970). We will discuss these applications a bit later. deCharms' notion of what he calls "personal causation" (or the perceived causes of other people's behavior) is formulated around Heider's (1958) balance theory of interpersonal relations. Heider's theory in turn centers on the construct of "unit formation," or the idea that two things that are once assumed to go together tend thereafter to be united in thought; this unity forms the

basis of expectations. That is, a person o who performs a positive act tends to be seen as a positive person and further positive acts are thereafter expected of him or her. The process by which this perception, or expectation unit, is formed is what deCharms calls the "attribution process"; the attribution process joins a behavior and a perceived attribute (the characteristics of the person) into a conceptual unit. In Heider's terms, this unit is a balanced one. Balance theory says expectations (the attribution of general positive or negative characteristics) and perceived actions of a person o must somehow be in balance (both positive or both negative) for the total perception (the unit) to be comfortable to the percipient p. If they are not in balance -- e.g., if a person perceived negatively performs a good act -- the balance must somehow be restored. deCharms supplies the terms for describing how this balance is restored. Balance is restored (and, thereby, a new perceptual unit is formed) by means of p attributing causation in a way that explains it away: either 1) causality is attributed to factors outside of o such as "luck" or "the influence of others" -- o is perceived as a pawn --, which leaves the initial negative balance intact but acceptable, or 2) causality is attributed to o directly (perceiving o as an origin, e.g., "if he did a positive act, he must be positive"), shifting the attributions of o to conform to his behavior and restoring the balance by shifting its sign (from negative to positive). That is, a person's characteristics are attributed to him or her initially as a function of actions; this initial attribution process defines the positive or negative character of the balance that is established. Attributed characteristics and perceived actions have to be a balanced unit; attribution of causality is a way of resolving imbalance.

Initial perceptions of persons and their behavior, then, lead to the attribution of positive or negative characteristics to the persons themselves by people observing them. The influence of these attributions on subsequent perceptions -- the relative rigidity of attributions in the face of later conflicting information -- is the question addressed by researchers applying the theory empirically. Questions asked by educators, in this framework, include: How do the characteristics and actions of the student affect the teacher's attribution of characteristics (expectations), his or her perception of causation (seeing the child as origin or as pawn) and his or her expressions of sentiment? (Johnson et al., 1964). Does the child's performance affect the teacher's belief about his or her own competence? Does it thereby affect the teacher's behavior and the student-teacher interaction patterns? Does a change in the child's performance affect the teacher's attribution of causality for the child's behavior? Is there a difference among teachers in changes in perceived causality when students go from high to low performance and vice versa? (Beckman, 1973).

The classroom-interaction variables suggested by attribution theory derive from a relatively limited body of educational research. This research, however, suggests several things: 1) students' initial performance is a powerful determinant of teachers' expectations of later performance, 2) students' initial performance thereby strongly influences how teachers will account for changes in performance (attribution of causality varies according to whether initial performance is high or low), 3) direction of change in student performance influences the teacher's perception of his/her own role in effecting the change, 4) therefore patterns of student

performance can influence teachers' perceptions of their own effectiveness, 5) whether teachers attribute student behavior to factors internal or external to the student depends on a complex net of variables, including of Pygmalion effects. Examples of educational applications of attribution theory are given below.

Johnson, Feigenbaum & Weiby (1964) derived an experimental methodology directly from Heider's (1958) formulation of balance theory. They had each of 80 student teachers teach two mathematics units to two fictitious pupils (behind a one-way screen), one pupil performing well on the first lesson and the other poorly. Each "pupil" then performed either well or poorly on the second task. The teachers were given a questionnaire after each lesson, rating pupils on the adequacy of their performance and accounting for the pupil's performance using a forced-choice "characteristics" subscale choosing either pupil A or pupil B on each of several dimensions (higher IQ, more motivated, lower social class, etc). The investigators found pupil A (high on initial tasks) to be perceived as positive and to have causation of behavior attributed to <u>him</u> (that is, attributed internally, perceiving him as an "origin" in deCharms' terms) after each task. Pupil B (low initial performance) had negative internal causes attributed to him initially; when he did not improve on the second task, teachers still saw him as responsible for his performance, but when he improved on the second task teachers attributed the change in performance externally, i.e., to the teachers themselves. Thus teachers seemed to grant the student responsibility for his/her initial behavior regardless of the adequacy of performance but to attribute later causation differentially depending on change in performance. Dimensions of causation in this study were

positive/negative and internal/external.

Beckman's (1973) work expanded the internal/external dimension to a tripartite division in which causality could be attributed to the child (internally), to the teacher (externally) or to the environment (externally). Beckman's work was in part a response to the Johnson et al. study reported above and to similar work (e.g., Jones et al., 1971) which retained the limited internal/external dichotomy. Beckman further complicated the situation by adding observers to the teaching setting. Fifty-six pairs of teachers and observers taught three five-minute lessons, over the course of which the fictitious "pupil's" performance either deteriorated, improved, or remained low. Observers ranked teachers on a seven-point scale; both teachers and observers were asked open-ended questions ("Why do you think the child performed as he did?") and structured questions calling for the ranking of several causal explanations for the performance; finally, measures of sentiment (pride in performance, praise for child, etc.) were obtained by teacher rating of the children on a 11-point scale. Hypothesizing that the child's performance affects the teacher's beliefs about his/her own competence and his/her attribution of causality for the child's performance (as well as sentiments toward the child), Beckman found that: 1) when the child's performance is initially high, teachers accept blame for deterioration, 2) when the child's performance is consistently low, teachers attribute this to external factors (teacher or environment), 3) teachers credit the child for improving his performance but do not blame him for deteriorating. This willingness of teachers to assume responsibility for the child's deterioration in performance contradicts the earlier findings of Johnson et al. (1964) and others: Beckman attributes

this difference to two factors -- teachers' increased sensitivity to Pygmalion effects at the time her study was done (and their tendency to overcompensate for them), and the presence of observers (which perhaps made teachers more modest). Attributions by participants and observers to varying changes in performance are summarized below.

Pupil Performance (over 3 lessons)	Teachers' attributions of causality	Observers' attributions of causality
low-low	environment	environment and teacher
high-low	self (teacher) or environment, equally	environment, teacher, & pupil
low-high	self (teacher) or pupil	teacher or pupil

The educational research on aspects of attribution theory relevant to this study forms a fairly small body of literature. The Johnson et al.(1964), Beckman (1970 and 1973), and Jones et al. (1971) studies constitute most of the directly relevant research; in all, there are perhaps no more than ten studies which specifically apply attribution theory and its terminology to the classroom. It is significant that all of this work was carried out in very strict laboratory conditions, where teachers were working with pupils they did not know and could not even see. Clearly it is because of this lack of visual clues that this research contradicts the importance of "global impressions" based on visual stereotypes, which person-perception research identified. Equally clearly, attribution theory research might produce quite different and more complex results if more realistic settings were studied. Its relevance to our own study, then, is less in its specific findings than in the questions it raises about how the sources of teacher expectations

might be identified and how teachers' perceptions affect their interaction with students.

Some of the questions raised by attribution theory include: Are some teachers more sensitive to environmental (external) constraints on students than others? Do these teachers attribute changes in achievement to external factors (teacher, school environment) rather than to fixed characteristics of the student (e.g., IQ, SES) more frequently than do less effective teachers? Do teachers of different styles and different degrees of instructional effectiveness differ in any consistent way in their attributions of causality in teaching situations? Relating this to process-ability research: do some teachers cite more categories of causes in accounting for performance than others? Do they see more dimensions of causality? Does this vary according to the situation, such as according to subject-matter or grade level? Do teachers react differently to students' questions and problems depending on their established perceptions of those students as "origins" or "pawns"? Does the same behavior in different students elicit different teacher responses according to teachers' attributions of causality for different students? What interactional characteristics besides performance contribute to the teacher's perception of students? Do pupils and teachers differ in their attributions of causality when change in pupil achievement occur?

Tentative answers to some of these larger questions can be found in some of the work of Brophy and his colleagues working on the origin of teachers' attitudes towards students. Willis and Brophy (1974) identified a set of descriptive dimensions which seem to differentiate students with whom teachers identify the following relations: attached to; concerned

about; indifferent to; reject. Willis and Brophy found consistent differences in teachers' descriptions of the students whom they assigned to those four categories. Physical and behavioral traits such as appearance, verbal skills, interaction with other children, work habits, health, classroom behavior (and five others) seem to influence teachers' attitudes toward students. How these attitudes are related to their attribution of causality for children's behavior or academic performance is an open question, but Brophy's work on the origins of teacher attitudes may suggest some of the informational factors operating in teachers' attribution of causation. For example, physical/behavioral characteristics of pupils might be factors that go into teachers' formation of perceptual "units" about students, and their subsequent reactions to pupils' classroom performance, thus influencing teacher effectiveness.

Techniques suggested by attribution theory which might be relevant to our study of classroom-interaction variables are not numerous. They include primarily categories of information which might be collected about teacher-pupil perceptions and content dimensions for teachers to refer to in evaluating their own teaching (rating scales). They suggest, for example, that investigators be aware of the "attribution of causality" dimension in characterizing teachers' descriptions of students or in prompting teachers to group students in different ways. Teachers might differ in the importance that "causality" has for them in reacting to students, they may or may not consider it salient information, and may or may not refer to causality in describing all students or in describing their own teaching. Thus one technical use of attribution theory for our purposes might be to build causality questions into characterizations of

the breadth and depth of information extracted by teachers about the classroom (see p. 10 for examples). Another use of attribution theory might be to construct rating scales by which teachers would characterize students in terms of causality of behavior and to compare this against other data obtained. Open-ended and forced-choice structured questions assessing teachers' attributions of causality to students might also be used in conjunction with more structured information-processing techniques.

Summary of studies on perception and perceptual information. The research available on perception and perceptual information, then, falls into at least three categories which can be directly related to classroom interaction situations. These are: 1) teacher as information-processor, 2) person perception and the formation of global impressions, and 3) attribution theory, the formation of expectations, and maintaining perceptual balance. We have indicated the questions and techniques which each of these three areas suggests. At this point it is useful to distill them down to a few major questions:

1. What kinds of information do teachers use in responding to their students? Do teachers differ in the breadth and depth of information extracted from classroom situations? Is there any kind of difference between preactive planning situations and interactive classroom situations in terms of amount of information used?
2. Do different patterns in breadth/depth of information used by teachers contribute to different perceptions of their own teaching effectiveness?
3. How much (and what kind of) information do different teachers use in accounting for their students' performance? Do they differ consistently in this respect?
4. Do differences in how teachers account for students' performance influence their response to pupils in interactive situations?
5. What kinds of (and how much) information do pupils use in characterizing their teachers?

6. Are there consistent differences in the breadth and depth of information used by pupils in characterising teachers who differ in teaching style and pupil outcomes? Do the pupils of teachers varying in style describe "what teachers do" differently?

7. Are individual differences in pupil achievement reflected in how different pupils perceive the same teacher?

Specific variables emerging from these three groups of perception studies that look promising for further exploration include: breadth/depth (evenness) of information extracted from situations; types of (stereotypic) categories teachers apply to pupils; behavioral cues supplied by the pupil and perceived by the teacher; initial (and then subsequent) performance of the student; teacher's knowledge of students' past performance; the presence or absence of an observer in the teaching situation. All of these seem empirically to influence, one way or the other, teachers' perceptions of pupils. It is not clear whether similar types of variables influence pupils' perceptions. Logically and theoretically these variables should influence the nature of the teacher-student interactions that are based on these teacher/pupil perceptions. This possibility is something to be examined further. (However, it is not within the scope of this study to explore all of these variables at this time.)

Some techniques suggested by these three groups of studies include: 1) measures of information-processing level, notably the open "sort" techniques and the generation-of-information/questions procedures discussed on p.11 of this review, 2) Q-sort, or a closed sort technique using a fixed number of information categories and statements for characterizing persons, 3) response-prediction techniques used in person-perception work, possibly applicable in identifying effective and less effective teachers' "understanding" of their classes, 4) causality rankings to assess teachers'

sense of their own and their students' responsibility for students' performance, and 5) open-ended and structured questions or comparisons of various kinds.

The Learning Climate as Related to Teacher-Pupil Perceptions

Studies which we have grouped together under the label "learning climate" cover a wide range of topics including, but not limited to, "classroom climate" research. These studies are concerned with teacher-pupil interactions on a broader level than the psychological perception studies allowed, and are concerned as well with the roles of the teacher and the pupil in the classroom. This broader concern with roles and learning climate is less directly pertinent to a study focusing specifically on interaction processes and perceptions of them, but it does provide helpful supplementary material. It is helpful in two ways: 1) it can suggest some of the classroom characteristics which interaction variables might influence, and 2) it provides a sort of social-pattern backdrop against which to view the more micro-level variables suggested by the perceptual-information studies.

This discussion will cover learning-climate research in only a very cursory fashion. This is partly because it has been covered already, and very thoroughly, in other sources (Good & Brophy 1973); and partly because our own study does not call for an exhaustive review of this material. The next few pages are an indication of the main points in this area.

Brief mention must be made of one strong component of learning-climate research which is relevant to the present study but only peripherally so. This is the area of "classroom climate," or "classroom atmosphere", which

attempts to identify the authority structure, degree of permissiveness, general style or flavor of the classroom and the role of teacher style and of student needs in creating this over-all quality. Classroom climate research is wide-ranging in the variables it examines and rich in instruments it has accumulated to measure these dimensions of climate, e.g., Walberg's scale for the social environment of learning (Walberg and Ahlgren, 1970). Although teacher and pupil attitudes and perceptions of the classroom are the core of the concept of climate and are the target of almost all measurement efforts (Hartly & Hoy, 1972; Hansen & Warner, 1970: Harvey et al., 1968), perceptions of the interactive teaching process itself have never been tapped. Measurement techniques in classroom-climate research, and consequently the variables which are most clearly substantiated, refer only to perceptions of social structure and general behavior patterns. The characterizing labels emerging from the research include "democratic/authoritarian," "abstract/concrete," "supportive/dominative," "open," and the like. All of these are investigators' abstractions of whole clusters of classroom variables; they do not help us directly in identifying perceptions of teaching itself.

Teacher expectations and their effects. In the seven years since the publication of Rosenthal & Jacobson's (1968) controversial investigation of the "Pygmalion effect" of teachers' expectations on pupils' achievement and behavior patterns, numerous studies have attempted to refine, substantiate, or negate (e.g., Ellashoff and Snow, 1971) the claims made in that work. Although Beckman (1973) found that teachers may by now be trying to compensate for this effect, by and large the research in this area

points to the possible importance of the self-fulfilling prophecy in classroom situations. There are two major concerns in the research on teacher expectations. The first is with identifying patterns of teacher-student interaction and relating these behavioral patterns to expectations held by teachers. Studies by Rowe (1969) and by Brophy and Good (1970) indicate that what teachers expect of pupils affects how they respond to them -- Rowe found that teachers allow high achievers more time to answer oral questions than low-achievers, and Brophy & Good found that teachers are more likely to give high-achievement students a second chance in failure situations, and that they praise "highs" more often for success and criticize them less often for failure. Rist (1970) found that the pupil groupings established intuitively by a kindergarten teacher having no information other than the children's physical appearance and behavior endured at least through third grade, by which time the groups were clearly differentiated in terms of attention paid them by the teacher, amount of contact with other students, and class participation.

The second focus in teacher-expectation research is on the effect of teachers' expectations on student achievement. Some effects have been demonstrated, but how the effect is mediated is still unclear. Three very diverse studies indicate the effects of teacher expectations. Beez (1968) studied adult tutors teaching Head Start children, Burnham (1968) studied swimming instructors teaching preadolescents, and Schrank (1968) studied Air Force math instructors teaching math to airmen. All three investigators manipulated the teachers' expectations upwards or downwards in different situations (with no factual basis for the expectations, since the groups were randomly selected), and all three found that students of instructors

who had been led to expect more actually learned more than students of instructors who had been given low expectations. Beez' (1968) study monitored the actual teaching behavior and found that the tutors who had high expectations attempted to teach more than those with low expectations, and that childrens' differences in learning were attributable to this difference. These three studies are examples of research which tries to manipulate teacher expectations artificially by falsifying aptitude scores and observing teachers' responses to students; though Fleming & Anttonen (1971) found that if scores are falsified with too great a distortion from the possible, teachers know it and are not affected by it, most studies have indicated that teachers do react differently to students depending on what they expect them to be able to handle. Henry (1955; 1957) found that elementary students learn quickly the sort of behavior the teacher expects and adapt themselves to it. Glasser's (1969) argument that schools' and teachers' expectations of failure build a failure-orientation into students and decrease their chances of success was based on much previous research by the author in detention schools; his model for a "success-orientation" school has been taken up by several schools and teachers report enormous differences in children's attitudes and interactions (Palo Alto Unified School District, 1972).

The relevance of teacher-expectancy research to the present study lies in the presumed intermediary role that teacher expectations play in determining the effects of perceptions on student outcomes. Teacher expectations, that is, may logically and theoretically be construed as the outcome of 1) information processing, 2) global impressions and 3) perceptual units attributing causality for a student's behavior.

Insofar as these converge in a teacher's "understanding" of a student to the point of knowing what to expect, teacher expectations are one bridge between perception and classroom behavior. Since knowing what these expectations are is, in the end, less directly helpful than knowing where they come from, our concern in identifying variables in teacher effectiveness is properly with the attribution/perception link in the chain. Teacher-expectancy research, however, gives a strong framework for understanding how the processes of perception function in the classroom.

Research on teacher and pupil perceptions of classroom patterns. Some work has been done on the differences between teachers' and pupils' perceptions of what is going on in the classroom. Good and Brophy (1973) summarize much of this research in their book Looking in Classrooms (esp. chapter 2, "Teacher Awareness"). Much of the research surveyed in this area falls under the even more global rubric of "classroom climate" relating to students' perceptions of indefinite "expectations" or "pressures" toward certain kinds of behavior (cf. Hartley & Hoy, 1972, Hansen & Warner, 1970). Classroom-climate research refers to very general sociological characteristics of classrooms and the relationship of these characteristics to specific student-teacher interaction patterns is only highly inferential. We will not consider these in this discussion.

More interesting are studies focusing on differences between how teachers see teaching and how students see it. Studies which document the actual amount of behavior engaged in by teachers substantiate the commonsense presumption that teachers are too busy to really see what is going on in their classrooms. Jackson and Lahaderne (1967) found that teachers initiate 80 individual interchanges with students each hour, on the average;

Jackson (1968) counted more than a thousand interpersonal exchanges between a teacher and students in a single day. Individual students, clearly, have more time than any one teacher to notice what is going on in classrooms; comparisons between the two perceptions are revealing and might indicate some of the items that teachers do not respond to. For example, Ehman (1970) showed that student and observer ratings of teacher behavior were highly similar, but that ratings of the same behavior by the teachers themselves differed markedly from these two sets of ratings. "The teachers could not accurately describe what they did in the classroom" (Good & Brophy 1973, reporting on the study). Wolfson and Nash (1968) found that teachers consistently perceived students to be making many more classroom decisions than the students saw themselves making. Emmer (1967) reported that teachers were unable to accurately describe even very simple classroom behaviors such as the relative amount of time teacher and pupils talked in the classroom. Borg et al., (1970) reported that teachers misperceive their level of attainment of the skills taught in teacher-training minicourses developed by the Far West Laboratory. Numerous studies show (a) the teacher's domination of classroom life (in terms of time and number of contacts initiated), (b) teachers' tendency to underestimate their direct role, and (c) teachers' inability to correctly describe what they <u>do</u> do.

This raises a caution that must be exercised in studies of teacher and pupil perception of interactive teaching behavior. The difficulty of getting accurate accounts of what effective (or less effective) teaching really consists of seems evident in these studies -- while it may be more important to identify what effective and ineffective teachers <u>think</u> they do, the apparent mismatch between their perceptions and those of their students may pose problems for refining the interaction variables. If in fact none

of the techniques used are able to produce accurate teacher descriptions of what goes on in teaching, then we must be prepared to evaluate the significance of the gaps between teacher and student accounts of teaching and perhaps to identify consistent patterns in these mismatches. (For example: can teachers be differentiated by how closely they approximate students' perceptions in describing their own behavior? Are the mismatches between teachers' and pupils' perceptions consistent in any way -- do teachers tend to omit any categories of information regularly, or is there any particular behavior they tend to ignore or downplay?).

Techniques used to study perceptions of the classroom situation include ratings, open-ended description, questionnaires, and observation by independent observers to corroborate accounts by participants.

Questions raised by this area of research include the following: What differences are there in the accounts teachers give of their teaching behavior? How do they differ in accuracy (against observers' reports or student descriptions)? How do students' descriptions of teachers differ? Do high and low-achievement students provide different kinds of accounts of their teachers? (That is, does differential effectiveness within one classroom produce different perceptions of the teaching process by students?) Are teachers who can more accurately describe their teaching more sensitive to fluctuation in the environment, do they extract more information from it (are they high-level information processors)? If so, how is this related to their effectiveness in teaching?

The similarity between these questions and those suggested by information-processing research (cf. pp 6-11) is apparent; both areas are concerned with teachers' and students' perceptiveness, their sensitivity

to detail and nuance, and generally their awareness of the schooling process. Presumably the techniques used in one might be translated to investigating the other. The information-processing (or "process ability") approach is concerned with the quality of information extracted in perceiving the teaching situation; the "teacher awareness" research focuses on the accuracy of these perceptions. Both areas imply fruitful questions about how teachers' and pupils' perceptions differ, about what contributes to the differences, and about what these perceptions may mean for teacher effectiveness.

Characteristics of Teaching and Studies of Teacher Effectiveness

The large body of research on teacher characteristics and teacher effectiveness will not be discussed in detail here. The major reviews of this research (Rosenshine, 1971; Good and Brophy, 1973; Brophy and Good, 1974; Dunkin and Biddle, 1974) have contributed to this study in two very important ways. First, the research has provided organizing concepts that guided the instrumentation (see especially the basic category system, Appendix A-1). Second, it forms the context in which the new variables suggested for further study will surely be examined.

Conclusions

The first group of studies considered here, the studies on perception and perceptual information, provide the most powerful leads into identifying the variables that influence teachers' perceptions of interactive teaching situations and their responses to the shifting demands of those situations. Probably the most useful framework is provided by the first set of studies within that group, the research on process ability and its concern with the quantity and quality of information teachers use in making interactive

decisions. This orientation to the problem provides both some strong suggestions of variables (e.g., breadth/depth of information) and practical concept-formation techniques that could be applied in assessing teachers' and pupils' perceptions of teaching. At the same time, the new and promising variables that might emerge from this approach to the problem could constitute a very coherent focus for subsequent research.

Supplementing this strong approach within the perceptual-information group are two other bodies of research -- on perception, and on attribution of causality. These are intriguing particularly in their possible relation to the antecedents of teacher expectations and their effects on achievement. Person-perception studies suggest something of what information is used in forming enduring impressions of other people. Attribution theory and its empirical applications are a means of investigating the process by which expectations and stable impressions are formed. Both supplement the process-ability focus on amount and quality of information used by attempting to describe how that information functions in guiding behavior. All three orientations, therefore, are especially pertinent to research on perceptions of interactive situations in the classroom.

We have referred briefly to two other groups of studies in this review. Studies on the learning climate of the classroom include teacher-expectation work and research on teacher/pupil perceptions of classroom patterns (including classroom climate). Studies on characteristics of teaching include the large number of correlational studies seeking to describe teaching behaviors and to identify dimensions along which teachers consistently vary. The learning climate studies were included in this review

as an indication of some of the practical extensions of the operation of variables suggested by the perceptual information studies. Learning climate studies describe situations and processes which information-processing might be expected to influence -- and these situations in turn may form a bridge to account for student outcomes in different styles of teachers. The teacher-characteristics research was cited only briefly, for its chief function in this study is to describe the context within which teacher-effectiveness research operates.

The research related to teachers' and pupils' perceptions of classroom interactions includes both classroom research and laboratory studies exploring psychological concepts of perception and information-processing. These studies, considered individually and in combination, suggest a number of possible directions for continued exploration that could well yield a set of new and promising variables in teacher effectiveness research. Not all of the implications of the research reviewed here can be explored at this time, but we have suggested some of the more salient questions raised by the work. It is around this selected group of questions that the present research is organized.

CHAPTER THREE

Design of the Study

This study examines both teacher and pupil perceptions of classroom interaction. It was conducted largely in classroom settings, but the settings were semi-controlled, in that the number of pupils to be taught, and the curriculum materials to be used were standard for all teachers. A heavy emphasis is placed on the information processing aspects of teacher and pupil perceptions.

This emphasis has affected the design of the study in one unusual way. It has led to the conceptual union of two studies, which have been conducted in tandem, but are reported separately. This study of teacher and pupil perceptions of classroom interaction (Special Study B) has been meshed with a study of teacher planning (Special Study C).

The questions of how teachers perceive their interactions and how teachers plan are closely related on a logical conceptual level. Largely for this reason, and partly also for reasons of timing and logistics, Special Studies B and C were interrelated also in terms of scheduling, sampling, and data collection. The discussion below briefly describes both the conceptual and the design similarities between the two studies.

The conceptual and logical relationships between the concerns of the two studies is immediately clear when phrased in simply circular terms: Teachers plan their interactions with pupils, their plans affect their perceptions of these interactions, and their perceptions and interpretations of these interactions affect their planning of subsequent interactions. But the interesting connection between the two processes lies in their reliance on a shared body of information. The argument for interrelating the studies stems from the fact that teachers have available for

use a certain limited set of data, and they must apply this data to develop guidelines to courses of action in two very different domains. Decision making in fast-paced interactive situations and decision-making in the quiet and unpressured realm of reflection and planning may be two very different kinds of activity, yet the two processes draw on a shared set of information.

Thus the major hypotheses of the two studies describe different applications of the perceptions of a single set of experiences. Study B hypothesizes that how teachers perceive their students in interactive classroom situations -- the ways teachers categorize pupils, the pupil characteristics and behaviors that are seen as salient, and teachers' own predispositions toward these characteristics and categories -- influence the decisions they make "on their feet" while the information is still coming in. Study C posits that perceptions of these same situations are also used (differentially by different teachers) in making less pressured and more systematic decisions in both short and long-term planning outside the classroom.

The conceptual differences between the concerns of Studies B and C, which argue for their being considered separately despite this congruence, are:

1. While a single set of experiences may provide the basis for decision-making at both levels, interactive and planning decisions may organize these experiences differently. Different perceptions of the same "data" may guide the two processes. It is important to identify how the information is used in each case.

2. Even in cases where the information is organized similarly for both kinds of decision-making, the teacher may actually react differently to this information in one context than in the other. Also, teachers may differ in their ability to use the same information equally effectively in both planning and classroom situations.
3. It is assumed that information gained through classroom interaction does not constitute the whole of the information used in planning. In less pressured decision-making contexts the teacher can call on other sources of information as well as the immediate behavioral data, and it is important to identify what additional kinds of information are used in planning.

Because of these differences between the studies, the research team collected different kinds of information about teachers' perceptions of a given set of experiences. In particular, in addition to information based on perceptions of the teaching activity itself, Study C calls on information not confined to particular teaching sequences and tries to identify the sources of the more general and more stable perceptions that teachers have of their pupils. But the logical assumption that the same set of experiences contributes to decisions in two very different domains remains the basis of conducting the two studies in parallel.

Since the research team was interested in characterizing teachers in terms of how they use information in both decision-making contexts, the two studies used the same sample of teachers. And the same sample of twelve pupils per teacher was used in the planning-interaction phase of both studies as well. This "match" of teacher and pupil samples allows a comparison of the responses

of teachers to the same pupils in each teaching situation. Given this overlap of samples, and given the fact that the studies are concerned with perceptions of the same phenomena, Studies B and C were run simultaneously and were handled jointly by the data collection staff.

Data Collection

A word of introduction is necessary because of the special way in which the procedures for Studies B and C were integrated. There were two different periods of data collection, one an intensive three-week period in March when each teacher was visited, individually, on two different days (once for each 20-minute lesson), and the other a six-day series of group meetings with teachers and pupils in April. All of the teacher data for Study B, concerning teachers' decisions while teaching and their assessments of lessons taught by other teachers, were collected during the three weeks in March. The data on pupils' concepts of teaching, also part of Study B, was all collected during April. Data for Study C on teacher planning was collected during both data-collection phases. Some of the Study C tasks were incorporated into (and were a logical continuation of) the teaching tasks which were the full source of Study B data; the more intensive phases of Study C data collection--the long and short-term diagnostic simulation tasks--comprised the six-day phase in April.

In order to describe the data collection procedures as they actually happened, this section breaks down the various procedures according to the order in which they were administered and not according to the specific study of which each was a part. Therefore, this section below is divided into four major parts: orientation; lessons and interviews, which refers to the March data-collection period; diagnostic simulation, the completion of Study C , in April; pupil concepts of teaching, the completion of the pupil portion of Study B. The different tasks of the two studies are assigned within these sections as follows:

A. Orientation-February

B. Lessons and Interviews-March

1. Reading lesson

   Lesson Plan (Study C)

   Teacher Sort Task (Study B)

   Stimulated Recall Task (Study B)

   Looking Back/Looking Ahead (Study C)

2. Math lesson

   Lesson Plan (Study C)

   Teacher Sort Task (Study B)

   Teacher Judgment Task (Study B)

   Lesson Variation Task (Study C)

C. Diagnostic simulation (Study C) - Apr.

   1. Diagnostic simulation (long-term)

   2. Diagnostic simulation (short-term)

D. Pupil concepts of teaching (Study B) - April

Orientation

The 40 teachers selected to participate in this phase of the BTES study were notified by telephone and letter by those in the BTES project who were responsible for identifying the "known sample." Details on selection of this sample are given in the preface and in the following section.

Orientation of the teachers to Special Studies B and C was conducted personally by the members of the research team who would be working with them. The orientation sessions took place during the week preceding the first phase of data collection, and were held in the teachers' own districts. Teachers were oriented in groups of from one to ten, grouped according to their proximity to each other; orientation groups included both second and fifth-grade teachers, and all received the same orientation.

At the orientation sessions, the investigators explained briefly that the 40 teachers had been selected on the basis of their differences in geographic area, teaching styles, and pupil achievement; all had understood from the previous phase of the project that the purpose of the study was to identify characteristics of teaching that would be relevant to teacher training programs. It was explained that each would be asked to prepare and teach two 20-minute lessons, one in reading and one in math, one of which would be videotaped, and that these lessons were unrelated to the Experimental Teaching Units. The instructional materials for these lessons were given to the teachers at this time.

The reading lesson was a short lesson on sentence expansion; the math lesson involved introducing pupils to a mathematical system known as a lattice. The instructional materials included a brief account of what was meant by sentence expansion and of the properties of the lattice; both sets of materials (identical for second- and fifth-grade teachers) included sample problems, a list of sample objectives that could be derived for a lesson, and instructions stressing that teachers should structure the lesson in any way that was appropriate to their teaching styles and their pupils.

Pupil lists were also given to the teachers at this time. These lists identified the 12 pupils (selected randomly to represent the range of reading abilities in their class) who were to participate in the lesson; substitutions necessary due to absences or changes in the class population were made, matching the absentees with other pupils of an equivalent reading-achievement level (high, medium, low). Details on the selection of pupils are given in the next section.

In order not to bias the teachers toward looking for certain things in their own teaching, the individual tasks following each lesson were not spelled out in detail. It was explained that the reading lesson would be videotaped and that the purpose of the tape was primarily to help them remember the lesson as the interviewers asked some questions about it afterwards. Teachers were told that the lattice lesson would be audio-taped only, that after that lesson they would be shown videotapes of other teachers teaching the same content, and that they would be asked some questions about those lessons and the lesson they themselves had taught.

Teachers were also told that one part of the study was designed to see how teachers actually plan for specific lessons. With the instructional materials they were told,

> We are trying to learn what teachers think about in planning or preparing lessons. As you get ready to teach this lesson, please make readable notes about what you expect to do in the lesson -- notes that would help an observer to understand your lesson more completely. These notes will be collected right after you have taught the lesson.

In addition, a written set of questions pertaining to planning was given to all teachers, along with a blank audiotape to be used if they chose to answer these questions orally.

The specific schedule for the data collection phase was worked out during the orientation sessions, with teachers selecting among the time slots available in each of the major geographical areas.

Lessons and Interviews (Studies B and C)

The 40 teachers were spread among four geographical areas: Sacramento, San Jose/Santa Clara, Mt. Diablo, Los Angeles (including Ventura). The four members of the research team were assigned 9 to 12 teachers each, depending on the constraints of geographical proximity and scheduling, and saw each teacher twice over a three-week period in March. One session

covered the reading lesson and the Stimulated Recall Task; the other covered the math lesson and the Teacher Judgment Task. The reading lesson was videotaped and for these sessions an assistant accompanied each investigator to handle equipment and assist in observations. The math lesson was recorded on audiotape, and no assistant was present at those sessions. Half of the teachers at each grade level taught the reading lesson first and half taught the math lesson first, in order to equalize the effects of novelty. In both the reading and the math lessons, teachers taught a 20-minute lesson from simple and relatively unstructured curriculum materials (see Appendix, Section Two) given to them during orientation one or two weeks previously. They taught in their own classrooms in almost all cases, teaching to a small group of 12 of their own pupils randomly selected to represent the range of reading achievement levels (high, medium, low) present in their classroom. The remaining pupils from the classroom were not present and were under the supervision of a substitute teacher; the 12 pupils later joined the substitute teacher while their own teacher was being interviewed after the lesson. The interview after each lesson took from one to two hours; all interviews were audiotaped. Each interviewer typically saw one teacher in the morning and one in the afternoon. In most cases the afternoon session was completed by the time the dismissal bell rang; aside from the time required to prepare the lesson, Study B demanded almost no out-of-class time on the part of the participating teachers.

Procedures for each teaching session and interview session are described in detail below.

Reading lesson. The reading lesson of each teacher was videotaped using Sony Porta-Pak equipment which was set up during the 15 minutes preceding the lesson, usually with the children already in the room. (In cases where the teacher or pupils requested it, pupils were filmed briefly and the tape

replayed, to allay curiosity or nervousness; more often the children were shown a few minutes of the replay after the lesson had ended). The teacher determined the physical set-up of the room, and the videotape equipment was adjusted to be able to capture all the pupils as well as the teacher. Usually the teacher had the 12 pupils grouped in the front of the room somehow (around a table, seated in a row, sitting on the floor), though occasionally the pupils would separate for seatwork.

The teacher signaled when he or she was ready to begin the lesson. Lessons were planned for 20 minutes but were videotaped up to 30 minutes if they continued that long. There was one camera person, who panned from teacher to pupils in order to follow interactions and included both close-up and distance shots. At the conclusion of the lesson the pupils were given a short test designed to measure pupil self-perception regarding their behavior in the specific lesson and in reading lessons in general. They were then sent to join the rest of the class. Teacher and interviewer then moved to a quiet room where an audiotape recorder and the videotape playback system were set up. The interview was audiotaped, and had three main parts, as follows:

1. Teacher Sort Task (Study B). Names of the pupils were written on separate index cards. After a brief introduction to the interview, in which the interviewer explained the format of the interview and urged the teacher to ask questions at any time, the interviewer introduced the Teacher Sort Task as follows:

> We're interested in the kinds of things that you noticed about pupils in the lesson you just taught. Could you take these cards and group the pupils, putting together the names of pupils that you think behaved or responded in similar ways during the lesson? You can have as many groups as you like, and as many names in a group as you like. You might even have a group of pupils that really didn't attract your attention very much during the lesson. I will be audiotaping your comments so that I don't have to bother taking notes. Any questions?

Clues were not provided and the teacher was not prompted in any way; directions were repeated as necessary for clarification.

After each sort the teacher was asked the following questions:

a. How are the children in each group similar? Describe please each group's characteristics. Please provide a descriptive phrase.

b. How are the sub-groups different from each other?

c. Can you think of another way that you might divide these pupils into sub-groups? Are there some other kinds of behavior that you noticed? Try putting them together in a different way.

Teachers were encouraged to re-sort the pupils as often and on as many different bases as they thought appropriate. The interviewer diagrammed each sort on paper, listing the pupil groupings, the descriptions of each grouping, and the label which the teacher gave to each full sort (e.g. "Participation", or "Performance in expanding the sentences").

When the teacher had finished the last sort, the interviewer asked, "Were there any pupils that acted differently than usual today? If so, who? How were they different?"

2. Stimulated Recall Task (Study B). The interviewer introduced this task at the completion of the Teacher Sort Task, as follows:

> We're interested in what you were thinking while you were teaching this lesson -- especially what you were thinking as you decided what to do next at various points in the lesson. As we play the lesson back, please tell me to stop the tape whenever we reach a point where you were consciously saying to yourself, "Let's see, I think I'd better do this now," or "I guess I'll try doing this." I may stop the tape myself at a couple of points, but you should tell me to stop it whenever there is a point in the lesson where you know you made a specific decision about what to do next in the lesson. Questions?

The videotape recorder and small monitor were within reach of the interviewer, who stopped and started the tape herself as the teacher identified decision points. If the teacher did not stop the tape

the first time a pupil gave an incorrect answer to a question and the second time there was a shift in pupil activity, the interviewer was instructed to stop the tape at those two points; on all occasions where the tape was stopped (by teacher or interviewer), the teacher was asked the following questions:

a. What were you thinking at that point?

b. What did you notice that made you sort of stop and think? (If necessary, add: Was there anything pupils were doing that made you sort of stop and think?)

c. What did you decide to do?

d. Was there anything else you thought of doing at that point, but decided against?

e. What was it?

Teachers were encouraged to stop and discuss their decisions as often as they liked.

At the end of the playback, the interviewer said:

> We've talked about several different decisions that you made during this lesson. Are there two or three that you think were particularly important for the success of the lesson? Which ones were they?

3. Looking Back/Looking Ahead (Study C). This task, properly a part of Study C, was a continuation of the Stimulated Recall Task, requiring teachers to reflect briefly on their own performance during the lesson. In introducing this task, the interviewer said,

> Now I'd like to ask you a few more questions regarding the lesson you just taught. I'd like to know more about how you evaluate this lesson and any modifications you might plan.
> Think about the responses of your students to the questions you asked (If there was written work, add: Take a few minutes please to look over these papers).

After a pause, the following four questions were asked (responses, again, were audiotaped):

a. If you were planning to teach this lesson to another similar group of pupils, would you change your plans in any way?

   1. What changes would you make?
   2. Why?

b. If you were going to continue teaching this topic to the same group of pupils, what would you plan to do in the next lesson?

   1. Why?

c. We've talked about teaching this lesson again to another group, and teaching a follow-up lesson to the same group.

   1. Do you normally think about any of those possibilities right after you've finished teaching a lesson?
   2. What do you usually think about after you've taught a lesson?

d. When you were planning this lesson, did you consider more than one way of doing it, before you settled on the procedure you used?

(Either before or at the conclusion of the interview, the interviewer collected the teacher's lesson plan and the written or audiotaped responses to the planning questions).

The whole interview, from the Teacher Sort Task through the last question, took about an hour, though occasionally it ran longer, depending on the length of the lesson taught and the number of times the teacher stopped the videotape. In every case the entire lesson was reviewed.

Math lesson. Math lessons were audiotaped on a cassette recorder which was set up immediately before the lesson started. Again, the teacher decided the physical setting; lessons were about 20 minutes long. The interviewer sat in an inconspicuous position behind the group of pupils, taking notes on the seating arrangement for later reference. As with the reading lesson, pupils were given a brief self-perception inventory, after

the lesson, then sent to rejoin the rest of their class, while teacher and interviewer adjourned to a quiet room for the interview. The interview was audiotaped, and had three main parts, as follows:

1. Teacher Sort Task (Study B). Instructions and procedures for the Teacher Sort Task were identical to those described in the foregoing section.

2. Teacher Judgment Task (Study B). The Teacher Judgment Task provided an opportunity for teachers to view other teachers teaching the same kind of content that they themselves had just taught. A videotape was shown to the teachers, presenting segments of five different lattice lessons, taught to small groups of pupils from grades two, four and five.

The lessons were varied in a number of different ways. In Lesson One a group of fifth graders "invented" their own problems, while the teacher wrote them on the board, organizing them according to type of operation. The teacher accepted all pupil ideas. In Lesson Two a group of second graders also invented their own problems, but they themselves drew arrows on a large chart in order to show their problems to the rest of the class. The teacher frequently redrew these arrows to make them larger or straighter. In Lesson Three the teacher used an inductive discovery method to lead a group of fourth grade students to realize that alternating arrows cancelled each other. Series of similar problems were written on the board. When pupils made an error the problem was "saved" for them to answer later, and the teacher wrote the pupil's initial next to the problem as a reminder. In Lesson Four a second grade group used individual worksheets to draw arrows and find answers to problems posed verbally by the teacher. The teacher held a large paper arrow

and demonstrated problems with this arrow and a number chart. No problems were written down. This teacher used a great deal of positive reinforcement. When a pupil gave an incorrect answer other pupils were invited to help in arriving at the correct answer. In Lesson Five a fifth grade group worked individually to place a geometric figure on a lattice according to a "code" (problem) that described the figure and its placement. When a pupil had difficulty the teacher gave additional directions so that the pupil could solve the problem alone.

Content focus of the lessons varied as well. Lessons One and Three dealt with the mathematical properties of the lattice (what operations were possible; how reciprocal operations functioned). Lesson Two and Four focused on the numerical value of the arrows (↑ = +10, ↓ = -10). Lesson Five presented the lattice as an arrangement in space, and related it to geometry.

The task of viewing these tapes was introduced to teachers as follows:

> I'd like to now show some short sequences of other teachers teaching a lattice lesson. In each case, this is the first time the teacher has introduced lattice work to the students shown. I will just be showing you short excerpts rather than an entire 20 minute lesson. After each of the sequences, which are about 5 minutes in length, I will ask you a few questions regarding what you have observed this other teacher doing, and particularly, what differences you see between the various lessons. Again, I will tape your answers to save my taking notes. Any questions?

After each sequence the interviewer stopped the tape and asked the following questions:

a. What do you notice about this teacher's general approach to the lattice lesson?

b. Which specific teaching procedures in this lesson seem particularly appropriate to you?

c. Were there any specific teaching procedures in this lesson that seemed inappropriate to you? Why?

After all sequences had been observed and commented upon in this manner, the interviewer asked the following questions:

a. Now that you've seen several variations of the lattice lesson, do you have any preferences?

   1) Was there one lesson that seemed more interesting or more successful to you than the others?

   2) If so, why?

b. Did you notice any differences in the way the various teachers reacted to pupil errors?

   1) What were they?

   2) Did any of these methods of responding seem more appropriate to you than any others? Why?

c. Did you notice any differences in the way the various teachers personalized the lesson or seemed to deal with pupil feelings?

   1) What were they?

   2) Did any of these methods seem more appropriate to you than others? Why?

3. Lesson Variation (Study C). The Lesson Variation Task, properly a part of Study C, was a continuation of the Teacher Judgment Task and was designed to allow teachers to reflect on their own lattice lesson after having seen others. The questions asked during this part of the interview were the following:

a. You have seen several different variations on the lattice lesson. Can you think of some other different approaches that might be interesting to try? (Probe for more)

b. You've suggested one (or several) additional variations on the lattice lesson. How do you think pupil responses to this (these) approaches might differ from pupil responses to your lesson? ... from pupil responses to the lessons you saw on the tape?

c. If you were going to teach the lattice lesson again to another similar group of pupils? What changes would you make in the lesson?

d. We asked you to teach a 20-minute lesson on the lattice to 12 students who were varied in ability, so we set quite a few limits on the way you might proceed. If you were going to teach a math lesson without any of those restrictions, how would you structure the lesson?

Altogether the interview following the math lattice lesson took about an hour.

Diagnostic Simulation (Study C). The second phase of data collection for the teacher planning study (Study C) took place over a period of six days and began two weeks after Phase I was completed. Data collection was done in workshop-style sessions lasting one full day each, with teachers meeting in groups of from four to ten depending on geographical proximity. In these sessions the researchers worked together as a team with each group of teachers. A full day was spent with each of the following groups: Sacramento (4), Mt. Diablo (7), San Jose/Santa Clara (7), and Ventura (10). Los Angeles teachers were divided into two day-long sessions, with 6 teachers in each session.

The planning study actually included five tasks, the first three of which (teachers' written lesson plans and answers to questions, the Looking Back/Looking Ahead and Lesson Variation Tasks), were incorporated into the data collection procedures reported under the lesson-interview phase. The day-long sessions referred to in this section covered the fourth and fifth tasks. These are referred to as diganostic simulation for long-term and short-term planning, respectively.

4. Diagnostic simulation (long-term). The long-range planning task was a simulation exercise designed to identify the kinds of information teachers consider important in planning a program for a year. This task was administered in the morning session and took about 3-1/2 hours.

Materials for this task were:

1. Four complete sets of "data banks" or cumulative school records on fourteen real children who were unfamiliar to the teachers. Separate information folders included data for either 2nd or 5th grade levels

on health and attendance, family background, teachers' comments, parent report card records, psychological reports, remedial reading reports, and the like. Second grade teachers received this type of cumulative record information covering the kindergarten and first grade performance of the children. Fifth grade teachers received information covering kindergarten through fourth grade. Not every type of information was available on all pupils because, as in real school settings, some children had transferred late and had incomplete files.

2. A set of blank index cards for each teacher.

3. A pad of paper and pens.

After the initial greetings and introduction of the teachers to each other, the task was introduced as follows:

> We are interested in knowing more about how teachers decide to organize their reading program for the year. This task "simulates" the conditions of the opening of school.
>
> You have been assigned a new group of pupils for the year. You must decide how to organize your reading program. You have available to you a variety of information on these pupils but you must specify each item or type of information that you want.
>
> What do you want to know about these pupils? Write your question on the 3 X 5 cards you have been given--one question per card. Give the cards to the Data Bank "assistant." She will give you the information you have requested. You can come back later for more information if you wish.
>
> You have three hours for this task. At the end of that time you should have completed:
>
> a. a brief description of your reading program referring to: who will be using what materials; your reasons for these assignments; the general objectives and types of activities for the year;
>
> b. a "thumb nail sketch" of each student, describing the important things you learned about him or her.
>
> In order to simplify this task, there are only fourteen students for you to think about. But you should make your plans as if these students are representative, and are only half of the class that you will be teaching.

Teachers were not told what information was available because it was important to record each teacher's individual decision as to what information was necessary or desirable. The interviewers numbered teachers' requests in the order in which they were made. Requests for information not available in the data bank were numbered and acknowledged and in these cases teachers were simply told that the files did not include that information and were encouraged to think of other data they might use. As each request was made, the appropriate folder was given to the teacher; because these were only 4 data banks for each grade level, teachers occasionally had to share a folder or wait until another teacher had finished with it, but this did not happen frequently, and did not seem to present a difficulty. The first twenty minutes or so of the "data-bank" task was usually fairly busy while teachers requested particular files and interviewers met the requests. After this, teachers worked on the pupil descriptions and the description of the reading program for about two to two-and-one-half hours, with only occasional new requests for folders occurring during this period.

As each teacher completed the task, he or she met and talked briefly with one of the interviewers. This discussion was designed to determine how closely the simulation task approximated teachers' actual planning procedures. The interview was tape recorded, and included the following four questions:

a. This was a simulation task, so we know it was somewhat different from the real planning you do at the beginning of the year. What do you think are the most important differences between what you did here today and what you do normally to prepare for a new class?

b. How would you characterize your reading instruction? Do you work with the whole class, or group, or individualize, or use some combination of those?

c. Suppose someone came in to observe your reading lessons this week, and then came back again in two months, what things might they see that would be similar, and what things might be different?

d. What types of reading materials does your school have available? Which of those do you find most useful? Do you use any special materials, that aren't supplied normally by the school?

This interview was short, usually about fifteen minutes; the descriptions of the reading program and of the pupils were collected at this time.

After each teacher had been individually interviewed, one of the interviewers then conducted a group discussion among all of them, designed primarily to enable teachers to share information with each other.

The major questions that guided the discussion were:

a. What other teachers or staff members in your district do you talk to or share information or materials with in planning for instruction?

b. How often do you have an opportunity to observe other teachers at work? How is this managed at your school? What are the advantages and disadvantages of such observations?

c. What do you think are the most important differences between the simulated task you did here today and what you do normally to prepare for a new class? (You've answered this individually. Now let's share our responses.)

d. How would you characterize your reading instruction? Do you work with the whole class, or group, or individualize, or use some combination of those? (You answered this question individually, too. We thought you might be interested in seeing how much variety exists in the group.)

e. Have you made any changes in teaching reading with this year's class compared to last year's class?

The group discussion usually ran at least a half hour, and sometimes as long as an hour. Teachers were eager to exchange notes and learn of each others' experiences, and the length of the discussion varied with the size and general mood of the group.

5. Diagnostic simulation (short-term). The short-term diagnostic task took place in the afternoon. It consisted of having teachers watch four segments of a videotape produced by Educational Testing Service in an earlier phase of the Beginning Teacher Evaluation Study, designed to assess teachers' skills in diagnosing reading problems. Each of the four segments showed one child reading a brief passage. Two of the children were reading word lists; the other two were reading a paragraph and were asked a few questions to test their comprehension. Each teacher had copies of the word lists and paragraphs, and could follow along as the child read. Several teachers complained that the sound quality of the tape was poor, and each segment was re-played once if teachers so requested. After each segment of the tape, the tape was stopped and teachers were given seven minutes to answer a set of written questions about what they had first seen. All teachers in both grade levels saw the same tape.

Pupil concepts of teaching (Study B). During a two-week period in April, at the same time that the diagnostic simulation phase of the study was conducted with teachers, pupils were interviewed in small groups to gather information about their concepts of teaching. The pupils who participated in this activity were drawn only from the Bay Area schools included in this study (Mt. Diablo, San Jose, and Santa Clara). The twelve pupils who had been involved in the reading and math lessons for each of the fourteen Bay Area classrooms (168 pupils in all) were divided into low, medium, and high groups based on the range of reading achievement test scores for the total sample, not the individual classroom. At each grade level (2nd and 5th) pupils were randomly selected from these pooled groups to form six groups of four students each. (Further details

are included in the section on Subjects). Each group included pupils from more than one school district. Two of the groups thus formed included two pupils from the same classroom.

Each of the pupil groups spent a day together at a central location. Four groups met at the Far West Laboratory and two met at a school in Santa Clara. Transportation was provided by parents and by Laboratory staff members. Each of the six pupil groups engaged in the same set of activities. All pupil interviews were conducted by the director of the research team, who has had ten years experience teaching elementary school children.

Pupils were told that their classroom teachers were participating in a study to learn more about teaching, and that the research team wanted to know what pupils thought about the ways teachers helped them to learn. The group interviews were conducted in four parts, with breaks for exercise, snacks, and lunch between each part.

Part one: General observations of teaching. Pupils were asked what things their teachers, or other teachers they had known previously, did that helped them learn. Their responses were written down on large sheets of white paper, which were hung on the walls as they were completed. Probing questions were asked where necessary to clarify ideas. All pupils were encouraged to participate in the discussion, and each idea that was recorded was initialled, so that pupils could identify which ideas they had personally contributed.

Periodically, the interviewer asked, "What other kinds of things can you think of that teachers do to help you learn?" There was no time limit. Each discussion went on until pupils began to run out of additional ideas.

Part two: Participant observations of a specific lesson. To introduce this part of the interview, pupils were told:

> Now we're going to have a short lesson together, and at the end I'm going to ask you what things you noticed me doing while I was teaching the lesson. Do you remember the lesson on expanding sentences that you had a few weeks ago, when you were videotaped at school? Well, we're going to have another lesson on sentences now, and at the end of it we'll try to do some more work with expanding sentences.

The lesson that was taught to all six groups of pupils dealt with differences between statements and commands. The lesson was taught inductively. All groups were given the same initial data, which consisted of sets of simple comparative sentences.

1	2
The planes fly.	Fly the planes.
The dogs walk.	Walk the dogs.
The plants grow.	
The colors change.	
The doors open.	

Pupils were asked to add more sentences, compare the two sets of sentences, and expand some sentences from each group. All pupil ideas were written on the chalkboard, and statements that compared the two sets of sentences were circled.

At the end of the twenty-minute lesson, pupils were asked what they had observed the "teacher" doing during the lesson. As in Part One, all of their comments were listed on a large white sheet of paper, and tacked to the wall.

Part three: Observing videotaped lessons. To introduce this part of the interview pupils were told:

A few weeks ago you had a lesson about a lattice. Do you remember the lattice? Here is what it looked like. Here are some problems on the lattice. Do you remember how to do them?.... Good. You remembered a lot. Well, we're going to look at some videotapes of teachers teaching a lesson on the lattice. First we'll look at a fourth grade group, then at a second grade group. We'll just see part of each lesson. After each lesson I'm going to ask you what you noticed that teacher doing.

Two videotaped segments were played (two of the five that had been shown to teachers during the earlier phase) and after each segment pupils were asked what they had seen, and their comments were written down on the white chart paper. As they watched the videotapes pupils were attentive to the lessons, calling out answers to the problems being posed to the videotaped class, and checking the accuracy of their answers.

Part four: Summarizing and evaluating observations. During this part of the interview pupils were asked to read over their earlier comments, which were recorded on the white sheets of paper tacked up on the walls of the room. They were asked individually to decide what ideas belonged together somehow. After they had time to study the charts and make notes each pupil was asked to suggest one group of items that were similar. These groupings were written down, including the "label" or title the pupil gave, and initialled, to identify which pupil had invented the grouping. After each pupil had given one group, they were asked to suggest any further ideas they might have. All pupil groups responded to this task except the low-achieving second graders, who were unable to find any items that they thought belonged together.

The final task for each pupil group was presented as follows:

Here is a colored pen for each of you. Read over all the ideas that we've written down, and pick the three that you think are the most important things that teachers do to help you learn. Write your initials down next to the ideas you think are the most

important. Each of you may think that different things are important, and that's fine. You don't have to agree with anyone else. Just put down what's important to you.

When pupils were finished with this final task, they were thanked for their help and taken back home.

Each of the four parts of this group interview took from thirty to forty minutes, and the parts were separated by breaks of from ten to thirty minutes. The pupils worked hard at these tasks and were obviously tired by the end of the day, but there was no difficulty in getting them to respond to the questions asked.

Subjects

Teacher Sample

The teacher subjects for this study were selected as a result of an earlier study conducted by the Far West Laboratory, called the "Known Sample" Study. In the known sample study two hundred volunteer teachers (second and fifth grades) taught a two-week unit on reading and a two-week unit on mathematics to pupils in their classrooms, using materials provided to them in the form of an Experimental Teaching Unit (ETU). Relevant pretest and posttest data on pupil achievement were collected in connection with the teaching of each ETU. In addition, teachers were observed once during the teaching of each ETU, and information was collected on each occasion regarding the type of classroom activity, class formation, and amount of structure.

Using this data, the directors of the known sample study selected forty teachers from among the two hundred subjects, to represent a geographic range (within California), including both urban and suburban schools, to provide a distribution in terms of pupil ability, to include a variety of teaching styles, and most importantly, to provide differences in pupil gain scores resulting from the two Experimental Teaching Units. The procedures used for this selection of teachers is described in a separate technical report of the Far West Laboratory.

As a result of the known sample study, twenty second grade teachers and twenty fifth grade teachers were identified for participation in Special Studies B (Teacher and Pupil Perceptions of Classroom Interaction) and C (Teacher Planning). These teachers were selected to provide two groups of ten teachers at each grade level. The groups were differentiated mainly on the basis of pupil gain scores, and also on the basis of teaching style. The research team conducting Special Studies B and C was not informed about any

data collected in the known sample study until after the preliminary analysis of data from their own studies was completed. They observed and interviewed teachers without prior knowledge of recorded pupil gain scores, or of their teaching style, as identified by the known sample study. They attempted to differentiate the teachers on other bases.

The forty teachers identified in the known sample study all participated in both Study B and Study C. Both of these studies deal with teacher perceptions of pupils, teacher collection and use of information, and teacher decision-making. They differ in that Study B focuses upon interactive teaching while Study C focuses upon preactive teaching (planning). Because planning and interaction are so closely interrelated, it seemed wise to work with the same sample of teachers in both studies. This permits certain comparisons between teacher behavior in interactive and preactive settings that would not otherwise be possible.

Pupil Samples

Two different samples of pupils were identified for this study. The pupils in Sample I participated in the interactive phase of the study. The pupils in Sample II participated in the simulation phase of the study.

Pupil sample I. Within each of the classrooms taught by the forty teachers in the teacher sample, a group of twelve pupils were selected to represent the range of pupil achievement in reading that existed in the class as a whole. Pupil achievement data collected during the known sample study were used to insure that this sample represented a cross-section of pupils in the classroom. Within each general achievement level (slow, average, fast) for a given classroom, pupils were selected randomly in an attempt to provide a group that was also fairly representative of pupil behavior traits (e.g., cooperative vs. "problem" behavior).

The twelve pupils thus selected participated in two lessons planned and taught by their own classroom teacher. These lessons were videotaped and the tapes used by teachers in the stimulated recall task. (The tasks were described in the previous section). These pupils were the focus of the teachers' attention in the teacher sort task. After each lesson, these pupils were administered a pupil self-rating form to determine self-perceptions of their general ability in reading/mathematics and of their behavior in the particular lesson just ended.

Pupil sample II. The pupils in Sample II were a subset of the pupils in Sample I, drawn only from participating classrooms in the Bay Area. There were a total of fourteen such classrooms in three different school districts, including eight fifth grade classrooms and six second grade classrooms. All of the Sample I pupils in these fourteen participating Bay Area classrooms were pooled and divided into six large groups on the basis of their achievement in reading (low, average, and high) and their grade level (2nd and 5th). From within each of these six groups a sample of four pupils was randomly selected. The resultant sample is diagrammed below.

	Grade Level	
Pupil Reading Achievement	2nd	5th
Low	4	4
Average	4	4
High	4	4

The pupils comprising each group were generally from different classrooms and different school districts. They thus represented a cross-section of pupils within the Bay Area. (A state-wide cross-section of pupils might have provided a more comprehensive sample, but this was not required for the type of data collection designed for this phase of the study.) Each group of four pupils

in this sample of twenty-four were brought together in a central location one group at a time, to participate in the pupil concepts of teaching task.

CHAPTER FOUR
Data Analysis

Development of Category Systems for Coding of Data

A basic category system was developed to code teacher responses to the various tasks so that the content of responses could be compared across tasks. The categories were arrived at in the following manner:

1. Responses of 8-10 teachers to the Teacher Judgment Task were reviewed and categories were formed to describe these responses in terms that would be fairly common to teachers and educational researchers alike.
2. Responses of the same group of teachers to the Stimulated Recall Task were reviewed and the categories already formed were expanded or collapsed, and new categories were added to handle the additional data.
3. Responses of pupils to the Concepts of Teaching Task were reviewed and again categories were expanded, collapsed, or added.
4. Responses of a new group of 8-10 teachers to the Teacher Judgment Task and the Stimulated Recall Task were reviewed by the four interviewer-coders working together, and the category system was further refined and clarified.
5. The interviewer-coders worked together over a series of additional audiotaped teacher responses to the same two tasks, attempting to attain concensus on the items to be coded. A few additional refinements were made in the category system at this stage.

In its final form the basic category system consisted of five major categories, with sub-categories under each. The major categories were General Approach (11 sub-categories), Materials (4 sub-categories),

Cognitive Aspects of Lesson (16 sub-categories), Affective Aspects of Lesson (8 sub-categories), and Physical Aspects of Lesson (6 sub-categories). The category system was not meant to be exhaustive in terms of what concepts might be used to describe instruction. It was devised merely to deal with the responses that teachers and pupils gave to the tasks posed them in this study.

An outline of the basic category system is included on the next page, with an indication of the patterns of response across tasks with regard to various sub-categories. A zero (0) indicates that no instances of that sub-category were found in coding responses to that particular task. Appendix A-I includes a more detailed presentation of the category system, with examples of each sub-category selected from the various tasks to illustrate the coding process.

The basic category system was used to code teacher and pupil responses to the following tasks:

Stimulated Recall Task (Study B)

Teacher Judgment Task (Study B)

Pupil Concepts of Teaching Task (Study B)

Teacher Planning of Lessons (Study C)

In addition to the basic category system, a set of task-specific categories was developed for each of the major tasks of the two studies. For Study B these tasks were the Stimulated Recall Task, the Teacher Judgment Task, and the Teacher Sort Task. For Study C task-specific categories were developed for coding teachers' plans and for analyzing responses to the Simulated Diagnosis Task (long-term planning). In each case the task-

Table 1

Basic Category System

A Comparison of Category Use in Relation to Various Tasks

	Teacher Judgment	Stimulated Recall	Pupil Concepts of Teaching
General Approach			
A. Goals	x	x	o
B. Instructional Strategy	x	x	x
C. Sequence of Procedures	x	x	o
D. Teacher vs. Pupil Structure	x	x	x
E. Teacher Activity	x	x	x
F. Pupil Activity	x	x	x
G. Management/Control	x	x	x
H. Seating Arrangement	x	x	o
I. Size, Composition of Group	x	x	x
J. Pupil Outcomes	o	o	o
K. Teacher Style	x	x	o
II. Materials			
A. Preparation of Materials	x	o	x
B. Type of Materials	x	x	x
C. Teacher Use of Materials	x	x	x
D. Pupil Use of Materials	x	x	x
III. Cognitive Aspects			
A. Teacher Introduction	x	x	x
B. Teacher Directions	o	x	x
C. Teacher Questioning	x	x	x
D. Teacher Selection of Pupils for Discussion	o	x	x
E. Teacher Wait for Response	x	x	x
F. Teacher Explanation	x	x	x
G. Teacher Response to Right/Wrong Answers	x	x	x
H. Teacher Summary and Review of Lesson	o	x	x
I. Vocabulary	x	x	x
J. Content Focus	x	x	x
K. Data (selection, organization, amount)	x	x	x
L. Pacing/Time	o	x	x
M. Pupil Ability	x	x	x
N. Pupil Background, Preparation, Needs	o	x	o
O. Pupil Ideas	o	x	o
P. Pupil Learning	o	x	x
IV. Affective Aspects			
A. Teacher Enthusiasm	x	o	x
B. Teacher Attitude Toward Pupils	x	x	x
C. Teacher Use of Positive Reinforcement	o	x	x
D. Teacher Language	o	x	o
E. Pupil Participation/Attention	x	x	x
F. Pupil Behavior	o	x	x
G. Pupil Feelings	o	x	o
H. Teacher Image	o	x	o
V. Physical Aspects			
A. Pupil Comfort	o	x	o
B. Teacher/Pupil Movement	x	x	x
C. Teacher/Pupil Proximity	x	o	o
D. Visual/Auditory	x	x	x
E. Classroom as a Whole	x	o	x
F. Non-verbal Communication	o	x	o

specific categories were developed to describe the types of responses teachers actually made to the task, as well as to reflect the types of differences in thought processes that the literature review had suggested might be pertinent.

A brief description of the task-specific categories for each of the major tasks of this study is contained in Appendix A-III, along with a copy of the data summary sheet used to record data for each different task.

Procedures for Coding Responses

Since the category systems were refined by the cooperative efforts of the four interviewer-coders, this process served to train the research team in use of the category systems. Consensus coding was used on all tasks, with two coders having reached agreement on the final categorization of each response.

Most teacher responses were recorded on audiotapes and coding was done from these tapes. In some instances a tape malfunctioned for part of an interview. If all responses to a task had not been recorded for a given teacher, that teacher was not included in the analysis of that task. On the Teacher Judgment Task seven teachers were "lost" because of malfunctioning audiotapes.

For all but one task the initial coding of all responses to a single task was completed by one coder. These categorizations were then reviewed by another coder, and where disagreements or questions arose, the categorization was discussed until agreement could be reached. The Stimulated Recall Task was treated as a special case, with each interviewer coding the tapes of the teachers she had interviewed. Since the interviewer had seen the lesson taught, and had reviewed the videotaped lesson with the teacher, the research team believed that each teacher's comments about the lesson would be more comprehensible to the interviewer than anyone else.

It was particularly expected that this would be the case in identifying from an audiotape the particular decision point the teacher was discussing.

Each task was either coded initially by the project director, or the initial coding of another team member was reviewed by the project director, in an attempt to maintain some continuity of coding interpretations across tasks.

None of the coders was informed of the identity of teachers with high pupil gain scores or low pupil gain scores until after all coding had been completed.

Analysis of Teacher Differences

As coding of each task was completed, one or more coders reviewed the data summary sheets for that task to search for patterns of differences in teacher responses to the task. Teachers were grouped according to these differences. The range, mean, and standard deviation of frequencies of various types of responses to each task were computed separately by grade to determine if large differences in response occurred.

After all tasks had been coded, information on high and low pupil gain scores was obtained from the research team who had worked earlier on the known sample study. The teacher groupings developed from responses to the various tasks were compared to the teacher groupings based on pupil gain scores to determine whether any significant correlations existed. In addition, the data summary sheets for each task were reviewed at this point to see whether new patterns of responses could be detected when teachers were grouped by pupil gain scores.

Information on differences in teaching style was also obtained at this point. During the known sample study, each teacher had been observed at two points in time while using the Experimental Teaching Units, once during

a reading lesson and once during a math lesson. Each time the observation extended beyond the lesson into normal classroom time. The observer collected information on classroom activity, formation, and structure, using the check list on the following page.

The information from these samples of observation was used to set up groups of teachers based on teaching style. At each grade level a group of five teachers was selected who on both occasions used lecture/drill activities with the total class in a setting where movement was restricted. These were called "Traditional/Stable Style" teachers. Another group of five teachers at each grade level consisted of teachers who showed variation in type of activity, type of grouping, and amount of freedom of movement, over the two lessons observed. In each case their two lessons varied in at least two of these three aspects. These were called "Varied Style" teachers. Each group of five teachers were roughly balanced by numbers of teachers having high or low pupil gain scores. The composition of the four groups is diagrammed below. Using the groups based on teaching style, responses to various tasks were again reviewed to determine whether similar or different patterns of responses were apparent.

	Traditional Style	Varied Style
2nd		
High Pupil Gain Scores	2	2
Low Pupil Gain Scores	3	3
5th		
High Pupil Gain Scores	3	3
Low Pupil Gain Scores	2	2

BASIC DATA ABOUT THE CLASSROOM

Date_____

Teacher_____

Number of children present_____

Number worked with
during observation_____

Please Check One Item From Each Box

Activity

1....Teacher in charge of class or part of class, including lecture and drill
2....Similar to 1, except an audio visual device in use
3....Teacher in charge, pupil or teacher reads frequently from book for class reaction
4....Teacher in charge, works with individuals or groups--seat-work, supervised study
5....Teacher in charge, unusual activity--games, dramas, songs, etc.
6....Pupils in charge, teacher observes any activity
7....None of above, miscellaneous

Formation

1....Total class
2....Groups
3....Individuals

Freedom

1....Restrictive
2....Can't tell
3....Open

Task Set

1....Teacher set
2....Pupil Set
3....Shares

Control

1....Teacher control
2....Pupil control
3....Shared control

For both pupil gain score and teaching style variables, selected comparisons were subjected to two-tailed t-tests (continuous variables) and tests for contingency tables (categorical variables). Raw scores were used throughout for the t-test. Since all tasks were open-ended, and each teacher was free to make as many comments as he/she wished, and whatever type of comment he/she wished, the various totals on a given task for a given teacher were treated as independent of each other.

Statistical tests of significance were used as one form of detecting relationships in the data. As a rule of thumb, the conventional probability level of .05 was generally used for rejecting the null hypothesis. However, because the study was initially designed to identify variables and relationships for future research the level of probability was "stretched" in certain cases. The attention of the reader is directed in some cases to probability levels that fall at or below the .10 level of significance. In reaching a conclusion about the merit of findings in this study as a map for future research, the approach of using statistical significance, a feeling of the practical utility of differences, and hunches or theoretical positions all played an integrated role.

The reader should be aware that the data analysis of this study was designed to reduce the probability that important relationships would be overlooked, even though this would tend to increase the risk of erroneously attributing significance to a chance relationship. The plan was to analyze the data for the purpose of generating, rather than testing, hypotheses, with the intention of taking the most promising hypotheses generated and testing them in subsequent research. The reader will note as he/she peruses this report that many tests of statistical significance were conducted. The

tests that were conducted are about one-third of the possible statistical tests that could have been conducted, given the data collected. The fact that many tests were conducted increases the likelihood that one or more of these might produce a low p value simply by chance, rather than because of a meaningful relationship in the data. Therefore, the p values reported are not very conservative tests of relationships.

Tests of Interviewer Influence

Each teacher was interviewed twice by one interviewer. All interviewers had been trained together, but since the interview schedule was rather open-ended and invited probing questions by the interviewer, a check was made to determine whether the frequency of teacher response varied systematically according to interviewer. Each interviewer worked with a different group of teachers. For the Teacher Sort Task the total number of sorts that teachers made was compared by interviewer. For the Stimulated Recall Task, the total number of decisions teachers discussed was compared by interviewer. For the Teacher Judgment Task, the total number of types of judgments that teachers made (categories mentioned) was compared by interviewer. Using a one-way analysis of variance, it was found that interviewers were not significantly different in the frequency of teacher responses they obtained for the various tasks. (See Tables 2,3, and 4).

Stability of Teacher Response

Only one task was repeated with teachers and that was the Teacher Sort Task, which was administered at the beginning of each interview. In this task teachers were asked to sort or group pupils on the basis of pupil behavior or response during the lesson, and they were encouraged to regroup on different

bases as many times as possible. To determine whether task repetition affected teacher response to the task, the number of sorts teachers made was compared from time one to time two, computing the mean difference and using a correlated t test. No significant differences were found (See Table 5). Teachers as a group neither increased nor decreased markedly in their tendency to re-sort on new bases, when the task was repeated a second time.

However, individual teachers were not stable in their response to this task over two trials. The correlation of individual responses between time one and time two was not significantly different from 0 ($r=.17$). This low correlation would seem to be appropriate, since teachers were asked to sort pupils on the basis of their observations during a particular lesson, and the number of types of observations made would vary according to pupil response to the particular lesson.

Use of Comparative Data

It is important to reiterate here that the purpose of this study was to generate new variables for further study, not to reach basic conclusions about relationships between teacher decision making and teaching style or pupil achievement. Some significant correlations were found and will be reported. Interesting trends that were non-significant will be reported also, since they suggest areas where further study might be fruitful. Finally, several variables will be reported upon because no differences appeared between teacher groups, when logic (or bias) suggested that differences should be there.

Table 2

Interviewer Influence

Teacher Sort Task: Number of Sorts Teachers Made

Interviewer 1	Interviewer 2	Interviewer 3	Interviewer 4
N = 9	N = 9	N = 10	N = 12
$\bar{X}$ = 5.78	$\bar{X}$ = 5.00	$\bar{X}$ = 5.60	$\bar{X}$ = 4.80

	Sum of Sq.	df	Mean Sq.	F
TOTAL	108.40	39		
Between	9.53	3	3.18	1.11
Within	102.87	36	2.86	

P > .05

Table 3

Interviewer Influence

Stimulated Recall Task: Number of Decisions Teachers Discussed

Interviewer 1	Interviewer 2	Interviewer 3	Interviewer 4
N = 9	N = 8	N = 8	N = 12
$\bar{X}$ = 15.00	$\bar{X}$ = 12.75	$\bar{X}$ = 11.56	$\bar{X}$ = 9.29

	Sum of Sq.	df	Mean Sq.	F
TOTAL	1014.25	36		
Between	178.80	3	59.60	2.34
Within	839.45	33	25.44	

P > .05

Table 4

Interviewer Influence

Teacher Judgment Task: Number of Types of Judgments Made

Interviewer 1	Interviewer 2	Interviewer 3	Interviewer 4
N = 4	N = 9	N = 9	N = 11
$\bar{X}$ = 25.75	$\bar{X}$ = 27.55	$\bar{X}$ = 26.33	$\bar{X}$ = 26.36

	Sum of Sq.	df	Mean Sq.	F
TOTAL	2125.8	32		
Between	12.35	3	7.13	.10
Within	2113.50	29	72.88	

$P > .05$

Table 5

Stability of Teacher Response

Teacher Sort Task: Number of Sorts Made

Time 1 = $\bar{X}_1$ = 2.78 t = 1.83

Time 2 = $\bar{X}_2$ = 2.35 df = 39

$P < .10$ and $> .05$

Teacher Perception Tasks:
General Descriptive Data
and Comparisons Based on Pupil Gain Scores

Teacher Sort Task

A task-specific category system was developed to code teacher responses to the Teacher Sort Task, based on research on categorizing behavior and on teacher responses to the task itself. (See Appendix A-III for data summary sheet and directions to coders).

Coded responses to this task were analyzed to focus on:

1. the number of sorts made, or the number of different bases a teacher used to group pupils
2. the number of sub-groups formed within a sort
3. the number of unique bases used ("unique" meaning a basis used by only one teacher - a grouping unique to that lesson, in most instances)
4. the number of complex bases used (conjunctive or disjunctive categories)
5. the number of situational bases used (i.e., bases referring to the particular lesson rather than to general patterns of pupil behavior or response)
6. the number of single-element groups (instances where a single pupil is grouped all alone)
7. the number of children for whom specific information was provided (i.e., individual children about whom the teacher made special comments while placing them in a group)
8. the basis for the first sort (i.e., the observations that seemed most salient to teachers)
9. the types of standard categories used in sorting pupils

Descriptive data.

The general pattern of responses is presented in Tables 6, 7 and 8. Responses differ very little between grade level or between lesson content. "Standard categories" are simply those bases that were used by more than one teacher. Teachers did not always use the terms designated here, but their descriptions fit into these general areas. Examples of unique bases for grouping were: creativity; pupils who had the most fun; pupils who need extra help to catch up; length of sentence pupils made up; pupils who shared information as requested; the way they filled in the lattice independently.

The most frequently used basis for grouping was Pupil Participation/ Response. Second grade teachers referred to Pupil Behavior more than fifth grade teachers, and mentioned Comprehension im mathematics more often than reading. Fifth grade teachers referred to Pupil Participation /Response more often than second grade teachers, and mentioned Bahavior during reading lessons more often than math lessons.

Comparative data.

When teacher responses to the Teacher Sort Task are grouped according to differences in average pupil gain score a few differences stand out. (See Table 9). Teachers with high average gain scores used single-element groups significantly more often than teachers with low average gain scores ($p < .05$), and also used cognitive bases (Achievement, Comprehension) for grouping more often ($p < .10$). Teachers with low pupil gain scores used affective bases (Behavior, Socialization, Attention, Participation/Response, Motivation) more frequently than teachers with high pupil gain scores, but the difference was not significant. Differences in pupil gain score were not

related to the number of sorts made, the number of groups formed within a sort, or the number of children for whom specific information was provided.

Table 6

Teacher Sort Task

Mean Frequencies of Selected Responses

	Grade 2		Grade 5	
	Reading (N = 20)	Math (N=20)	Reading (N = 20)	Math (N=20)
Number of Sorts	2.9	2.5	2.6	2.5
Number of Unique Bases	.3	.25	.3	.3
Number of Complex Bases	.75	.5	.65	.5
Number of Single-Element Groups	1.4	1.3	1.65	1.4
Number of Children-Specific Information Provided	5.0	4.85	4.4	3.8

Table 7

Teacher Sort Task

Bases for First Sort

	Grade 2		Grade 5	
	Reading (N = 20)	Math (N=20)	Reading (N = 20)	Math (N=20)
Reading Achievement	1	0	2	0
Math Achievement	0	2	0	1
General Achievement	2	0	0	1
Behavior	3	1	3	2
Socialization	0	1	1	0
Attention	2	1	0	1
Participation/Response	7	8	10	9
Comprehension	2	6	5	4
Motivation	0	0	0	0
Unique Basis	3	1	0	2

Table 8

Teacher Sort Task

Overall Use of Standard Categories*

	Grade 2		Grade 5	
	Reading (N = 20)	Math N=20)	Reading (N = 20)	Math (N=20)
Reading Achievement	3	1	2	2
Math Achievement	0	3	1	5
General Achievement	5	1	4	4
Behavior	12	9	9	1
Socialization	2	1	2	2
Attention	3	2	2	3
Participation/ Response	16	12	20	20
Comprehension	8	15	10	11
Motivation	1	2	0	4
Meeting Teacher Expectations	1	1	1	1
Seating Arrangement	1	0	4	0

*Note that most teachers made more than one sort after each lesson.

Table 9

Teacher Sort Task

Comparison of Means* Based on Pupil Gain Score

	High Pupil Gain Score (N=20)	Low Pupil Gain Score (N=20)	
Number of Sorts	5.2	5.1	
Number of Groups per sort	3.0	3.2	
Number of Single-Element Groups	3.34	2.4	**
Number of Children-Specific Information Provided	9.9	8.1	
Number of Sorts Using Cognitive Bases	2.9	2.1	***
Number of Sorts Using Affective Bases	2.3	3.0	

*figures in this table are based on responses to two administrations of this task; second and fifth grade data are combined
**t-test of significance, $p < .05$, df = 39
***t-test of significance, $p < .10$, df = 39

Table 10

Teacher Sort Task

Trends of Means by Grade Level

	Second Grade		Fifth Grade	
	High Pupil Gain Score (N=10)	Low Pupil Gain Score (N=10)	High Pupil Gain Score (N=10)	Low Pupil Gain Score (N=10)
Number of Unique Bases	.9	.4	.9	.3
Number of Complex Bases	1.6	.9	1.2	1.3
Number of Situational Bases	4.2	2.7	3.2	2.8

Some interesting trends appear in Table 10, though none of the differences are significant. There was very little teacher use of unique or complex bases for sorts generally, (See Table 6), but teachers with high pupil gain scores tended to use these types of bases more than teachers with low pupil gain scores. The trend holds for use of situational bases, a somewhat more common phenomenon.

It was expected that teachers with high pupil gain scores might be more attentive to pupil performance on specific tasks within a given lesson, so this aspect of bases for sorting was examined. Table 11 shows the distribution of teachers on this variable. On Fisher's Test of Exact Probabilities, the difference appraoches significance ($p = .1274$).

When the bases for first sorts are compared according to pupil gain scores, few differences are noted. No tests of significance were made on this data. (See Tables 12 and 13).

To summarize briefly, teacher responses to the Teacher Sort Task varied very little on the basis of differences in grade level or lesson content. On the basis of teacher differences in pupil gain scores, significant differences were found in the number of single-element groups formed and the number of sorts using cognitive bases. Teachers with high pupil gain scores exhibited higher frequencies of both these types of responses. There was a non-significant tendency for teachers with high pupil gain scores to use affective bases less frequently, and to use unique, complex, and situational bases more frequently. Teachers with high pupil gain scores also tended to use pupil performance on a task within the lesson more frequently, but frequencies of this response were too low for a test of significance.

Table 11

Teacher Sort Task

Use of Pupil Performance on Task Within Lesson as a Basis for Sort*

	High Pupil Gain Score	Low Pupil Gain Score
Used	7	2
Not Used	13	18

* Fisher's Test of Exact Probability, p = .1274

Table 12

Teacher Sort Task

Comparison of Bases for First Sorts - Reading

	Second Grade		Fifth Grade	
	High Pupil Gain Score (N = 10)	Low Pupil Gain Score (N = 10)	High Pupil Gain Score (N = 10)	Low Pupil Gain Score (N = 10)
Achievement	1	2	1	1
Behavior	2	1	1	2
Socialization	0	0	0	1
Attention	1	1	0	0
Participation/Response	5	2	6	4
Comprehension	0	2	2	2
Seating Arrangement	0	1	0	0
Unique	1	1	0	0

Table 13

Teacher Sort Task

Comparison of Bases for First Sorts - Math

	Second Grade		Fifth Grade	
	High Pupil Gain Score (N = 10)	Low Pupil Gain Score (N = 10)	High Pupil Gain Score (N = 10)	Low Pupil Gain Score (N = 10)
Achievement	1	2	0	1
Behavior	0	1	0	2
Socialization	1	0	0	0
Attention	0	1	0	1
Participation/Response	3	5	5	4
Comprehension	4	1	3	2
Seating Arrangement	0	0	0	0
Unique	1	0	2	0

Stimulated Recall Task

Teacher responses to the Stimulated Recall Task were coded using the basic category system described earlier. A task-specific category system, developed on the basis of teacher responses to the task, was used in addition, and differentiated among the following types of data:

I. Types of Decisions Identified

A. Interchanges (decisions relating to instantaneous verbal interaction, i.e., how to react to a particular pupil comment or question)

1. accept pupil comment
2. reject pupil comment
3. give information to pupil
4. seek information from pupil
5. call on new pupil

B. Planned Activities (interactive decisions directly related to preactive decisions)

1. "do it now" - i.e., this is the time to begin the next planned activity.
2. skip or drop - i.e., eliminate a planned activity.
3. reorder - i.e., change the sequence of planned activities
4. refine - i.e., decide in more detail or revise the exact procedures to be used for a planned activity.
5. "stet." - i.e., consider changing a planned activity in some way, then decide to stick with the original plan.

C. Unplanned Activities (decisions to include an activity that was not originally part of the lesson plan).

1. pupil source - i.e., the activity is suggested by a pupil
2. teacher source - i.e., the idea for a new activity originates with the teacher.

II. Aspects of Decisions Discussed

A. Decision Substance (comments about the particular move made or action taken)

1. Sub-categories come from basic category system

B. Considerations Noted (comments about what the teacher hopes to achieve or avoid by choosing a particular action).

1. Sub-categories come from basic category system

C. Information Referred To (comments about data the teacher knows or has observed that he/she considers pertinent to a particular decision).

1. Sub-categories come from basic category system

D. Alternatives Considered (comments about other moves or actions that might have been taken).

1. No sub-categories used.

Coded teacher responses were analyzed to focus on:

1. the number of decisions a teacher identified and discussed.
2. the proportion of attention given to each type of decision (interchange, planned, unplanned).
3. the number of considerations noted.
4. the number of items of information referred to.
5. the number of alternatives mentioned.
6. the number of references to cognitive aspects of the lesson (decision substance, considerations, information).

7. the number of references to affective aspects of the lesson (decision substance, considerations, information).

Descriptive data.

The general pattern of teacher responses to the Stimulated Recall Task in terms of number and types of decisions discussed is presented in Table 14. Slight differences between grade levels can be noted, with second grade teachers discussing a slightly larger proportion of interchange decisions, and fifth grade teachers discussing a slightly higher proportion of planned decisions.

Table 14

Stimulated Recall Task

Number and Types of Decisions Discussed
(Comparisons of Means)

	Second Grade (N = 18)	Fifth Grade (N = 20)
Number of Decisions Discussed	10.8	12.9
Proportion of Interchange Decisions	48.7%	42.6%
Proportion of Planned Decisions	48.4%	54.2%
Proportion of Unplanned Decisions	2.9%	3.2%

Second and fifth grade teachers also tend to display similar patterns in terms of the sub-categories they individually emphasized (used with greatest frequency). Table 15 compares the numbers of teachers emphasizing specific categories for different aspects of decisions discussed. Major differences seem to be that more fifth grade teachers emphasize Content Focus, while more second grade teachers emphasize Pupil Behavior and Pupil Ideas.

Comparative data. When teacher responses to the Stimulated Recall Task are grouped according to teacher differences in pupil gain scores on the ETUs, no significant differences are found, but an interesting trend appears (see Table 16). With few exceptions teachers with low pupil gain scores mention specific aspects of their decisions more frequently, that is, they appear to have more things in mind as they discuss their interactive decisions. The exceptions to this trend are that very little difference exists between groups in the number of alternatives considered, and that fifth grade teachers with high pupil gain scores mention cognitive aspects of the lesson (and in particular refer to Data Selection and Organization) slightly more frequently than their counterparts with low pupil gain scores.

In examining the data, no obvious differences were found between teachers who produced high versus low pupil gain scores in terms of the types of decisions they tend to discuss most frequently (Interchange, Planned, Unplanned). No tests of significance were used in analyzing that aspect of the data.

One general pattern observed was that the teachers in this study seem to focus on the sub-categories related to instructional process, rather than those related to pupil characteristics or behavior, in commenting on decision substance. More than half of the teachers made no reference to

Table 15

Stimulated Recall Task

Number of Teachers Emphasizing Specific Subcategories*

	Second Grade (N = 18)	Fifth Grade (N = 20)
Decision Substance Discussed		
Teacher Response to Right/Wrong Answers	10	11
Teacher Selection of Pupils for Discussion	2	4
Management/Control	1	1
Pupil Activity	1	1
	14	17
Considerations Noted		
Pupil Participation/Attention	5	5
Data Selection and Organization	4	5
Content Focus of Lesson		5
Pupil Learning	2	3
Pacing/Time	1	3
Pupil Behavior	2	
	14	21
Information Referred To		
Pupil Behavior	10	5
Pupil Ideas	7	3
Pupil Participation/Attention	1	2
Pupil Learning	1	1
Pupil Background	1	1
Pupil Ability	1	1
	21	13

*Note that not every teacher had an "emphasis," while a few emphasized two subcategories equally.

Table 16

Stimulated Recall Task

Mean Frequency of Responses According to Pupil Gain Scores

		2nd		5th	
		High Pupil Gain Scores (N=9)	Low Pupil Gain Scores (N=9)	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
I.	Number of Decisions Discussed	9.6	12	13	13.9
II.	Number of Alternatives Considered	2.2	2.2	3.4	3.7
III.	Number of Items of Information Referred To	8.9	9.4	10.2	11.2
IV.	Number of Considerations (Reasons for Decision) Referred to	16.1	18.1	18.5	22.3
V.	Number of References to Cognitive Aspects	17.2	19.3	27.4	26.9
VI.	Number of References to Data Selection and Organization	2.2	2.7	3.7	2.9
VII.	Number of References to Affective Aspects of Lesson	9.3	12.3	7.1	9.9
VIII.	Number of References to Pupil Participation/Response	3.1	4.2	3.0	4.1

pupil categories in identifying the substance of their decisions. This focus is reversed when considerations or information referred to in making decisions is discussed. In these instances, teachers seem to emphasize sub-categories related to pupil characteristics more frequently than those related to instructional process.

When teachers are grouped according to differences in pupil gain score, the same pattern is visible (see Table 17). No significant differences are found, but teachers with high pupil gain scores show a greater tendency to have a "balanced" emphasis in considerations and information referred to (15.6 is the mean frequency of use of pupil categories, and 12.3 the mean frequency of use of process categories). Teachers with low pupil gain scores show more difference in emphasis (17.6 is the mean frequency of use of pupil categories, and 10.5 the mean frequency of use of process categories).

To summarize briefly, teacher responses to the Stimulated Recall Task varied only slightly on the basis of grade level differences. When teachers were grouped according to differences in pupil gain scores, no significant differences in responses were found, but a pattern of responses emerged. Teachers with low pupil gain scores tended to mention a larger number of items that they were taking into account on almost all aspects of decisions discussed. All teachers referred to process categories more than pupil categories in discussing decision substance, and to pupil categories more in discussing considerations and information. Teachers with high pupil gain scores used process categories more frequently in commenting on considerations and information used than did teachers with low pupil gain scores, but this difference was not significant ($p \approx .15$).

Table 17

Stimulated Recall Task

Teacher Emphasis on Pupil vs. Process Categories
(Mean Scores)

	High Pupil Gain Scores (N=19)	Low Pupil Gain Scores (N=19)
Decision Substance		
Pupil Categories	.7	1.0
Process Categories	16.3	18.2
Considerations and Information		
Pupil Categories	15.6	17.6
Process Categories	12.3	10.5

Teacher Judgment Task

Responses to the Teacher Judgment Task were coded using the basic category system. A set of task-specific categories were used in addition. These were developed to reflect teacher responses to this task as well as research on thinking. The task-specific categories are presented on the following page.

Coded responses to this task were analyzed to focus on:

1. the number of observations made and the major categories used in making observations
2. the number of factual vs. judgmental comments made
3. the number of positive and negative comments made
4. the number of cateogrical vs. situational comments made
5. the number of comments indicating need for more information
6. the number of comments noting a procedure was new and interesting
7. the number of comments comparing taped teachers to each other or to oneself
8. the number of comments noting alternative procedures
9. the number of comments about cognitive and affective aspects of the lessons observed
10. the number of comments referring to pupil categories and process categories
11. the preferences expressed in reviewing all five lessons

Descriptive data.

The general pattern of responses is presented in Tables 18, 19, and 20. There are few differences between second and fifth grade teachers in their frequency of various responses (Table 18), except that second grade teachers tended to make more negative judgments than fifth grade teachers. Teacher preferences for various lessons are also roughly

Task-Specific Categories

Teacher Judgment Task

Judgmental/Factual

+ - judged appropriate

- - judged inappropriate

0 - neutral or factual observation

"Interference"

Ø - inaccurate observation

M - unusual interpretation

? - uncertainty

Makes Comparisons

E - compares to own teaching situation

T - compares to other taped teachers

Universal/Situational

C - categorical rule proclaimed

S - appropriateness is situational

I - indicates doesn't have all necessary information to verify or make judgment

Curiosity

Q - wants to know more about a procedure

N - notes it's a new idea

U - unexpectedness - shows surprise at an event

Considers Alternatives

A - proposes alternative procedure

R - revises earlier judgment

Generalizations About Teachers - makes statements (without probing) that synthesize observations, noting similarities and differences among the group of teachers on videotape, or noting similarities and differences among teachers in general.

Witholding Judgment - a score obtained by summing the neutral or factual observations (0), the comments indicating that appropriateness is situational (S), the indications that information is lacking (I), and the instances of revising an earlier judgment (R).

Table 18

Teacher Judgment Task

Table of Means by Grade Level

	Second Grade	Fifth Grade
Total Observations Made	27.5	25.9
Proportion of Use of "General Approach" Categories	22.3%	23.3%
Proportion of Use of "Materials" Categories	15.9%	16.9%
Proportion of Use of "Cognitive" Categories	46.5%	47.6%
Proportion of Use of "Affective" Categories	11.0%	9.8%
Proportion of Use of "Physical" Categories	4.3%	2.4%
Proportion of Factual Observations	20.1%	22.9%
Proportion of Positive Judgments	45.5%	46.5%
Proportion of Negative Judgments	34.5%	29.4%
Number of Situational Comments	3.0	2.3
Number of "New Idea" Comments	.3	.2
Number of Comparisons to Self	5.1	4.3
Number of Comparisons to Taped Teachers	2.2	2.9
Number of Alternatives Mentioned	3.1	1.3

similar across grade levels (Table 19). It is interesting to note the shift in expressed preferences as different questions are asked. Lessons 4 and 5 are most interesting and successful. Lesson 3 receives most comments (and mixed reviews) in relation to teacher reaction to pupil errors, while Lesson 4 is considered the best example of personalizing a lesson. Table 20 presents information on the specific sub-categories emphasized (used with greatest frequency) by individual teachers. Here more differences appear in patterns of responses between grade levels. More fifth grade teachers focus on Teacher Response to Right/Wrong Answers and Pupil Use of Materials. More second grade teachers focus on Pupil Learning.

It is interesting also to compare Table 20 to Table 15 and note shifts in teacher focus from the Stimulated Recall Task to the Teacher Judgement Task. Teacher Response to Right/Wrong Answers receives emphasis in both tasks, but the focus on Pupil Behavior, Pupil Participation/Attention, and Pupil Ideas, drop off markedly in the Teacher Judgment Task. In reviewing their own lessons teachers comment more about pupils than they do in observing the lessons of other teachers.

Comparative data.

When teachers are grouped according to pupil gain scores more differences in response to the Teacher Judgment Task are noted (see Table 21). It is important to point out here that the responses of seven teachers to this task were not completely recorded because of malfunctioning tape recorders. Five of these "lost tapes" happened to be for second grade teachers with high pupil gain scores. Consequently the N for this group is quite small. However, second grade teachers with high pupil gain scores comment on new techniques significantly more than those with low pupil gain scores ($p < .05$), and make comparative comments about the teachers on videotape significantly less frequently ($p < .05$).

Table 19

Teacher Judgment Task

Expressed Preferences in Comparing Lessons

	Second Grade (N=15)		Fifth Grade (N=18)	
	Positive Judgements	Negative Judgements	Positive Judgements	Negative Judgments
Was one lesson more interesting or successful?				
Lesson 1 (5th)	4	0	6	0
Lesson 2 (2nd)	3	1	1	1
Lesson 3 (4th)	4	1	4	1
Lesson 4 (2nd)	9	0	11	0
Lesson 5 (5th)	7	0	12	0
Any differences in teacher reactions to pupil errors?				
Lesson 1	0	0	0	0
Lesson 2	0	5	0	4
Lesson 3	3	8	6	7
Lesson 4	2	1	3	0
Lesson 5	1	1	2	2
Any differences in ways teachers personalized the lessons:				
Lesson 1	0	0	1	1
Lesson 2	0	2	1	1
Lesson 3	0	3	2	0
Lesson 4	8	0	9	0
Lesson 5	0	0	4	0

Table 20

Teacher Judgment Task

Numbers of Teachers Emphasizing Specific Subcategories

	Second Grade (N=15)	Fifth Grade (N=18)
Teacher Response to Right/Wrong Answers	3	9
Instructional Strategy	4	2
Pupil Use of Materials	0	4
Pupil Learning	4	0
Content Focus	1	3
Data	2	1
Teacher Style	2	1
Preparation of Materials	2	0
Teacher Introduction	1	1
Pupil Participation/Attention	1	1

Table 21

Teacher Judgment Task

Comparison of Means by Pupil Gain Score

	Second Grade		Fifth Grade		Combined	
	High Pupil Gain Scores (N=5)	Low Pupil Gain Scores (N=10)	High Pupil Gain Scores (N=9)	Low Pupil Gain Scores (N=9)	High Pupil Gain Scores (N=14)	Low Pupil Gain Scores (N=19)
Noted Need More Information Before Making Judgment	2.4	3.6	3.9	1.7 ***	3.4	2.7
Noted an Idea or Technique that Was New and Interesting	.8	.1 **	.2	.2	.43	.16
Compared Taped Teachers to Self	7.4	3.9	5.0	3.6	5.9	3.7 ***
Compared Taped Teachers to Self or Others	1.4	6.5 **	3.33	6.0	2.6	6.3 *
Made Categorical vs. Situational Comments (U-S)	6.0	5.0	4.8	7.5 **	5.2	6.2

* t-test of significance, $p < .01$, df = 32
** t-test of significance, $p < .05$, df = 14 (2nd grade) and 17 (5th grade)
*** t-test of significance, $p < .10$, df = 17 (5th grade) and 32 (combined)

These differences are also apparent when grade levels are combined. Comments on new techniques show a non-significant trend and tendency to compare is significant at the .01 level. Fifth grade teachers with high pupil gain scores note that they need more information in order to judge the videotaped teachers more often than do those with low pupil gain scores ($p < .10$ approaches significance), and make proportionately fewer categorical (vs. situational) comments about the videotaped teachers ($p < .05$). (The reader will recall that teachers with high pupil gain scores tended to use more situational bases on the Pupil Sort Task, though this difference was not significant). There is a tendency at both grade levels for teachers with high pupil gain scores to compare the videotaped teachers to themselves, and when the grades are combined this difference approaches significance ($p < .10$).

Table 22 presents information on responses where differences between teacher groups might reasonably be expected on the basis of research on thinking, but no significant differences occur between these groups. It is particularly interesting to note that in observing other teachers, the teachers with high pupil gain scores are not significantly more critical nor more objective, do not mention more alternatives, do not withhold judgment more often, and do not concentrate on cognitive aspects of the lesson more. Consideration of alternatives and attention to cognitive aspects of the lesson are variables that were examined in relation to the Stimulated Recall Task as well, and the reader may recall that no significant differences were found between teachers with high and low pupil gain scores in that instance either.

On the Stimulated Recall Task, teachers with high pupil gain scores make more comments about instructional process in discussing considerations and information used (See Table 17). On the Teacher Judgment Task this trend is repeated, but again the difference is not significant.

Table 22

Teacher Judgment Task

Table of Means According to Pupil Gain Score

	Second Grade		Fifth Grade	
	High Pupil Gain Score (N=5)	Low Pupil Gain Score (N=10)	High Pupil Gain Score (N=9)	Low Pupil Gain Score (N=9)
Number of Observations Made	30.8	25.8	25.4	26.3
Number Positive Judgments Made	14.4	11.3	11.7	13.3
Number Negative Judgments Made	10.4	9.2	7.7	7.1
Number Objective Observations Made	6.0	5.3	6.1	5.6
Number Alternatives Mentioned	3.0	3.1	1.8	1.0
Number Instances of Witholding Judgment	11.6	12.3	13.1	9.1
Number Cognitive Aspects Mentioned	14.6	11.9	12.3	12.4
Number Affective Aspects Mentioned	3.0	2.8	2.4	2.6

	Combined Grades	
	High Pupil Gain Scores	Low Pupil Gain Scores
Number of References to Pupil Categories	6.9	6.1
Number of References to Process Categories	9.14	7.0

One very interesting difference occurs in relation to teachers' preferences for particular lessons. Lessons 2 and 3 received more negative comments (see Table 19) than any others, particularly in response to the question about teacher reactions to pupil errors. In Lesson 2, a second grade teacher says, "good" frequently, but also frequently corrects pupil responses, including redrawing arrows they have made on a chart. In Lesson 3 a fourth grade teacher says "No" when pupils miss a problem, but also initials that problem and leaves it for that child to correct, going on to present additional problems of the same type for the class to solve, in order to provide clues for the pupil about how to solve "his problem". When teacher negative judgments about these two lessons are compared on the basis of pupil gain scores, teachers with high pupil gain scores make negative judgments about Lesson 2 significantly more often than teachers with low pupil gain scores. Teachers with low pupil gain scores make negative comments about Lesson 3 more frequently, and this difference approaches significance ($p<.10$). (See Tables 23 and 24).

To summarize briefly, there are few differences between second and fifth grade teachers in their response to the Teacher Judgment Task. When teachers are grouped on the basis of average pupil gain scores on ETU's, significant differences do occur in noting that more information is needed to make a judgment, noting that an idea or technique is new and interesting, making comparisons among teachers, and making categorical vs. situational comments. Teachers with high and low pupil gain scores also differ in the lessons that they judge negatively. There are no significant differences in other areas, such as number of objective observations made, alternatives mentioned, instances of withholding judgment, cognitive aspects mentioned, or references to instructional process.

Table 23

Teacher Judgment Task

Judgments on Teacher Response to Pupil Errors:
Lesson 2 - Teacher Corrects Pupils Freqently (2nd grade)

	Judged Negative	Didn't Judge Negative
High Pupil Gain Score	7	7
Low Pupil Gain Score	2	17

Fisher's Test of Exact Probability, p = .0191

Table 24

Teacher Judgment Task

Judgments on Teacher Response to Pupil Errors:
Lesson 3 - Teacher Saves Problem for Pupil to Correct Own Error (4th grade)

	Judged Negative	Didn't Judge Negative
High Pupil Gain Score	4	10
Low Pupil Gain Score	11	8

$x^2 = 3.05$, $p < .10$

Teacher Perception Tasks: Comparisons Based on Teaching Style

Information was collected on the classroom organization procedures used by all two hundred teachers involved in the known sample study. They were observed on two occasions, once during a reading lesson, and once during a math lesson. Each time the observation extended for up to thirty minutes beyond the ETU lesson, so that information on "natural" classroom activities was also collected. (The rating scale that was used for this observation is included in the section on Data Analysis).

Descriptive data.

The whole sample of two hundred teachers tended to lecture to a total class, in a setting which they controlled, and to set the instructional tasks themselves. There was more balance observed in relation to freedom of movement vs. restricted movement of pupils. The observation data for all two hundred teachers is presented in Table 26. Note that in a few instances, e.g., fifth grade mathematics activities, the numbers total more than the one hundred teachers observed. When shifts in activity, formation, etc. occurred during the observation period, both activities or formations were included in the totals. Some columns total less than 100 because of incomplete data.

The teachers in this study tend to follow the same basic patterns as the larger sample. Table 26 shows the observation data on activity, formation, and freedom of movement for the forty teachers in this study. These are the data that were used to set up groups representing different teaching styles.

Formation of "teaching style" groups.

In setting up these groups for each of the three criteria, a division was made between two basic styles. Under activity used, the first three types

Table 25

BASIC CLASSROOM DATA
2nd and 5th Grade

	READING		MATHEMATICS	
	2nd (N=100)	5th (N=100)	2nd (N=100)	5th (N=100)
ACTIVITY				
1. Teacher in Charge, Lecture	46	60	41	81
2. Teacher in Charge, A-V	7	8	4	7
3. Teacher in Charge, Read Aloud	5	4	1	3
4. Teacher in Charge, Seatwork	21	19	20	16
5. Teacher in Charge, Unusual Activity	18	8	18	7
6. Pupil in Charge	4	1	5	3
7. Miscellaneous	0	0	1	0
	101	100	90	117
FORMATION				
1. Total class	63	68	62	81
2. Groups	28	31	22	14
3. Individuals	7	2	8	3
	98	101	92	98
FREEDOM				
1. Restrictive	40	65	39	61
2. Can't tell	6	12	10	13
3. Open	50	23	39	22
	96	100	88	96
TASK SET				
1. Teacher set	83	88	79	91
2. Pupil set	2	0	1	2
3. Shares	9	10	8	3
	94	98	88	96
CONTROL				
1. Teacher control	67	80	61	68
2. Pupil control	3	5	3	3
3. Shared control	23	15	24	25
	93	100	88	96

Table 26

Basic Classroom Data for the "Known Sample"

	Reading		Mathematics	
Activity	2nd (N=20)	5th (N=20)	2nd (N=20)	5th (N=20)
1. Teacher in Charge, lecture	8	12	11	13
2. Teacher in Charge, A-V	3	1	0	1
3. Teacher in Charge, read	1	1	0	1
4. Teacher in charge, seatwork	5	5	3	3
5. Teacher in charge, unusual activity	3	1	5	0
6. Pupil in Charge	0	0	1	2
7. Miscellaneous	0	0	0	0
Formation				
1. Total class	13	15	15	13
2. Groups	5	5	4	5
3. Individuals	2	0	1	2
Freedom				
1. Restrictive	11	13	7	13
2. Can't tell	1	3	3	1
3. Open	8	4	10	6

were combined, and situations in which the teacher was in charge, lecturing, presenting audio-visual materials, or reading aloud, were labeled "lecture/drill," the other types (seatwork, unusual activity, pupil in charge) were combined and called "other activities." Under class formation a differentiation was made between total class and other formations (group/individuals). Freedom of movement was divided between "clearly restricted" and "open or questionable". Individual teachers were considered in terms of whether they used a particular procedure on both of the occasions they were observed, or varied their organization from one lesson to another. Teachers who maintained the "standard" approach over two lessons were grouped under "basically lecture/drill," "basically total class," and "basically restrictive." Teachers who varied from lesson to lesson, or who maintained the "non-standard" approach over two lessons were grouped under "other activity," "some groups, individuals," and "some open."

Tables 27-29 show comparisons between teaching style and pupil gain score, using these three characteristics of classroom organization. It is interesting to note that the fifth grade teachers with high pupil gain scores tend to follow the standard patterns throughout, while the second grade teachers with high pupil gain scores tend to show more variety in type of activity and freedom of movement.

Comparative data.

To examine effects of teaching style more closely, four groups of five teachers each were set up, using a combination of criteria. Teachers who used the standard approaches consistently were placed in a group called "Traditional/Stable Style" and teachers who varied their approach consistently were placed in a group called "More Open/Varied." As described in the section

Table 27

Type of Activity

		Basically Lecture/Drill	Other Activity
2nd			
	High Pupil Gain Score	3	7
	Low Pupil Gain Score	5	5
5th			
	High Pupil Gain Score	7	3
	Low Pupil Gain Score	4	6

Table 28

Class Formation

		Basically Lecture/Drill	Some Groups, Individuals
2nd			
	High Pupil Gain Score	7	3
	Low Pupil Gain Score	4	6
5th			
	High Pupil Gain Score	7	3
	Low Pupil Gain Score	4	6

Table 29

	Freedom	
2nd	Basically Restrictive	Some Open
High Pupil Gain Scores	3	7
Low Pupil Gain Scores	3	7
5th		
High Pupil Gain Scores	7	3
Low Pupil Gain Scores	4	6

on analysis of data, both groups contained balanced numbers of teachers with high and low pupil gain scores. Because of the heavy weighting of teachers toward the standard approaches to classroom organization, it was not possible to form larger groups for a comparison of teaching styles.

Table 30 organizes teacher responses to the Teacher Sort Task based on differences in teaching style. None of these differences were significant. The general trend is for teachers of standard style to have slightly higher scores, with two exceptions; second grade teachers of varied style form more single-element groups, and fifth grade teachers of varied style use more cognitive bases.

Table 31 shows teacher responses to the Stimulated Recall Task grouped according to differences in teaching style. Again there are no significant differences between groups. Teachers of standard style tend to mention alternatives, considerations, and cognitive aspects of the lesson slightly more often, while teachers of varied style tend to mention more items of information used; otherwise the groups seem to respond in very similar ways.

Table 32 presents teacher responses to the Teacher Judgment Task differentiated by teaching style. Two significant differences were found between groups. Second grade teachers of standard style make significantly more observations about instructional materials than do those of varied style ($p < .02$). Fifth grade teachers of varied style make significantly more comparative statements in discussing their observations of videotaped teachers than do those of standard style ($p \approx .05$). Teachers of varied style at both grade levels make slightly more references to cognitive aspects of the lesson and to pupil categories, but these differences are not significant.

Table 33 compares negative comments on Lessons 2 and 3 according to

Table 30

Teacher Sort Task

Table of Means Based on Teaching Style

	Second Grade		Fifth Grade	
	Standard (N=5)	Varied (N=5)	Standard (N=5)	Varied (N=5)
Number of Sorts Using Unique Bases	.6	.4	.8	.6
Number of Sorts Using Situational Bases	4.4	2.8	3.4	2.8
Number of Single-Element Groups Formed	1.0	2.2	4.0	2.0
Number of Children Specific Information Provided	8.6	4.4	5.6	5.8
Number of Sorts with Cognitive Bases	1.8	1.8	.8	1.6
Number of Sorts with Affective Bases	3.0	2.0	2.6	2.4

Table 31

Stimulated Recall Task

Table of Means Based on Teaching Style

	Second Grade		Fifth Grade	
	Standard (N=5)	Varied (N=5)	Standard (N=5)	Varied (N=5)
Number of Decisions Discussed	10.6	10.6	12.2	11.8
Number of Alternatives Considered	3.0	1.8	3.6	2.8
Number of Items of Information Referred to	6.6	8.0	8.2	10.4
Number of Considerations (Reasons for Decision) Referred to	17.2	12.8	21.0	17.0
Number of References to Cognitive Aspect of Lesson	17.8	16.8	24.8	23.2
Number of References to Affective Aspects of Lesson	9.6	9.0	8.6	6.8
Number of "Interchanges" Discussed	5.0	5.4	5.8	5.0
Number of "Planned" Decisions Discussed	5.0	4.8	6.0	6.2

Table 32

Teacher Judgment Task

Comparison of Means Based on Teaching Style

	Second Grade		Fifth Grade	
	Standard (N=5)	Varied (N=5)	Standard (N=5)	Varied (N=5)
Number of Observations Made	29	26	23.4	30.4
Number of Positive Judgments Made	12.8	13	10.2	13.2
Number of Objective Observations Made	4.6	4.8	6.4	5.6
Number of Alternatives Mentioned	3.8	3.0	2.0	1.4
Number of Cognitive Aspects Mentioned	11.2	14.0	13.0	14.2
Number of Affective Aspects Mentioned	3.6	2.4	1.6	2.6
Number of References to Pupil Categories	6.4	7.0	5.8	6.6
Number of References to Instructional Materials	6.8	3.2*	2.8	4.4
Compared Taped Teachers to Self or Others	8.0	6.2	5.0	10.6**

* t-test of significance; $p < .02$, df = 9
** t-test of significance; $p \approx .05$, df = 9

Table 33

Teacher Judgment Task

Judgments on Teacher Response to Pupil Errors
(Based on Teaching Style)

Lesson 2 - Teacher Corrects Pupils Frequently (2nd grade)*

	Judged Negative	Didn't Judge Negative
Standard Style	4	6
Varied Style	5	5

*Fisher's Exact Probability, p = 1.000

Lesson 3 - Teacher Saves Problem for Child to Correct Own Error (4th grade)**

	Judged Negative	Didn't Judge Negative
Standard Style	3	7
Varied Style	6	4

**Fisher's Exact Probability, p = .3698

differences in teaching style. There are no noticeable differences in judgments about Lesson 2. Teachers of standard style make negative judgments about Lesson 3 less frequently than teachers of varied style, but the differences are not marked. Fisher's Test of Exact Probability indicated that neighter of these distributions are significantly different.

To summarize briefly, when teachers are grouped according to differences in teaching style, there are almost no significant differences in response to the major tasks used in this study, and very few observable trends. The significant differences noted are that in the Teacher Judgment Task second grade teachers of varied style make fewer references to instructional materials and fifth grade teachers of varied style make more comparisons between teachers. It should be noted that judgments of teaching style were based on only two classroom observations, that among the forty teachers studied there was less variation in teaching style than in pupil gain score, and that the groups being compared on the basis of teaching style were much smaller. It is difficult to know how much the small N's may have affected results. Given these limitations, however, there are more differences in teacher response to these tasks that are related to teacher differences in pupil gain scores than to differences in teaching style.

Findings Related to Pupil Perceptions

Pupil Self-Perceptions

Originally it was planned that categories formed by individual teachers in the Teacher Sort Task would be used to construct pupil self-rating forms to be administered to their pupils, so that pupil self-perceptions could be compared to teacher perceptions of those pupils. We still think that is a good idea, but the pilot study demonstrated that the logistics were impossible to manage, given the small staff, the number of teachers to be interviewed, and the short period of time (three weeks) in which all interviews had to be conducted.

Teachers in the pilot study used largely standard categories to group their pupils, so standard forms for pupil self-ratings in reading and math were developed, using the characteristics that the pilot study teachers referred to most frequently. Copies of the forms are included in the Appendix B-II. It was expected that pupil responses to these standard forms could be compared to teacher grouping of pupils when they used standard categoreis. But even this hope proved to be in vain.

In attempting to analyze the teacher responses to the Teacher Sort Task in relation to pupil responses to the Pupil Self-Perception Task we discovered that the specific terms used by teachers to describe pupil groupings rarely matched the specific terms used in the pupil self-rating forms closely enough to be able to say that teacher and pupils were referring to the same behavior. Therefore the attempt to match teacher perceptions to pupil self-perceptions was abandoned.

However, it was decided to get a general picture of pupil self-perceptions in reading and math, and to compare these by grade level and by teacher differences in pupil gain score and teaching style. These comparisons are

presented in Tables 34, 35, and 36.

There are no differences in pupil self-perceptions by subject matter (Table 34) but second grade pupils make significantly more negative ratings than do fifth grade pupils ($p < .01$). Fifth grade pupils make "don't know" or unsure ratings more often than second grade pupils, but this difference was not put to a test of significance.

When pupil self-ratings are compared according to teacher differences in pupil gain socres (see Table 35), it becomes evident that pupils in classes with low pupil gain scores make significantly more negative self-ratings in reading. This is true for second grade alone ($p < .01$), and for second and fifth grades combined ($p < .05$). There is a tendency for pupils in classes with high pupil gain scores to make more positive self-ratings but this difference was not significant.

When pupil self-ratings are examined in terms of teaching style, no remarkable differences are observed (see Table 36). Fifth grade pupils in standard style classrooms make slightly more positive self-ratings in reading, fewer positive self-ratings in math, and more "don't know" or unsure ratings in both areas than do pupils in varied style classrooms, but these differences are very slight.

To summarize briefly, pupil self-perceptions of behavior during a reading and math lesson show that second graders make significantly more negative self-ratings than fifth graders, that pupils in classes with low average pupil gain scores make significantly more negative self-ratings after a reading lesson than pupils in classes with high average pupil gain scores, and that pupil self-ratings differ only slightly when they are grouped according to teaching style.

Table 34

Pupil Self-Perception

Mean Scores by Subject Area and Grade Level
(Based on Total Group Responses)

	Second Grade		Fifth Grade	
	Reading (N=20)	Math (N=20)	Reading (N=20)	Math (N=20)
Number Positive Ratings	73.6	78.9	74.5	73.5
Number Negative Ratings	26.0	24.6	19.1	18.9
Number Unsure Ratings	12.3	14.7	21.6	21.1
Number Negative Ratings Reading and Math Combined	50.6		38.05	*

* t-test of significance; $p < .01$, $df = 39$

Table 35

Pupil Self-Perception

Comparison According to Class Average Pupil Gain Scores
(Based on Total Group Responses)

	Second Grade		Fifth Grade		Combined	
	High Pupil Gain Score (N=10)	Low Pupil Gain Score (N=10)	High Pupil Gain Score (N=10)	Low Pupil Gain Score (N=10)	High Pupil Gain Score (N=20)	Low Pupil Gain Score (N=20)
Number Positive Ratings						
Reading	77.9	70.8	74.9	73.7	76.4	72.45
Math	80.1	77.8	76.9	70.0	78.5	73.9
Number Negative Ratings						
Reading	21.7	30.4 *	17.9	20.3	19.8	25.35 **
Math	24.6	24.5	17.9	20.0	21.2	22.3

* t-test of significance, p .01, df = 19
** t-test of significance, p .05, df = 39

Table 36

Pupil Self-Perception

Table of Means According to Teaching Style
(Based on Individual Pupil Response)

	Second Grade		Fifth Grade	
	Standard Style	Varied Style	Standard Style	Varied Style
Reading				
Number Positive	6.4	6.1	6.1	5.7
Number Negative	2.2	2.4	1.4	1.9
Number Unsure	1.0	1.3	2.3	1.9
Math				
Number Positive	6.7	6.0	5.7	6.6
Number Negative	1.8	2.2	1.6	1.7
Number Unsure	1.3	1.5	2.3	1.7

Pupil Concepts of Teaching

The Pupil Concepts of Teaching Task was designed to discover what aspects of teaching behavior are particularly pertinent to pupils. The summary results of the pupil interviews are presented in Table 37, divided by grade level and ability group. The differences among categories are significant (that is, distribution of comments among categories is not random) at both the second grade level (X^2=137, $p < .005$) and the fifth grade level (X^2=1268, $p < .005$). There is no significant difference between grade levels, or among ability groups when grade levels are combined. Both grade levels and all three ability groups give greatest emphasis to cognitive aspects of teaching, and emphasize "general approach" secondarily.

When comments on cognitive aspects of teaching alone are compared by ability groups, there is a significant difference among groups (X^2=8.26, $p < .025$), with the middle ability group making the highest proportion of observations related to cognitive aspects, and the low ability group making the lowest proportion of such observations.

Distribution of pupil observations is examined in more detail in Table 38, where frequency of comments is broken down according to sub-categories, and by sub-tasks included in the interview procedures. It is interesting to note that the most frequently mentioned sub-category under General Approach is Management/Control, and that almost all these references occur during Part I, when pupils are commenting generally on what teachers do to help them learn. In the Cognitive realm most emphasis is placed on Teacher Response to Right/Wrong Answers, Data Selection and Organization, and Teacher Selection of Pupils for Discussion. (For those readers who are interested in further details, a breakdown by sub-category, sub-task, and pupil grade level and ability group is included in the Appendix C-II.)

Table 37

Pupil Concepts of Teaching

Major Categories Mentioned by Ability Group

	Grade 2 High (N=3)	Grade 2 Middle (N=4)	Grade 2 Low (N=4)	Grade 2 Totals	Grade 5 High (N=4)	Grade 5 Middle (N=4)	Grade 5 Low (N=4)	Grade 5 Totals	Overall Totals
General Approach	15	9	11	35	17	9	16	42	77
Materials	2	4	5	11	4	6	7	17	28
Cognitive	28	30	15	73	30	30	19	79	152
Affective	1	2	2	5	2	1	4	7	12
Physical	2	2	1	5	1	2	3	6	11
Total	48	47	34	129	54	48	49	151	280

Table 38

Pupil Concepts of Teaching

Sub-categories Mentioned by Task

	Part I General Observ.	Part II Partic. Observ.	Part III Videotape Observ.	Part IV Grouping	Total
General Approach					
Instructional Strategy	5	0	5	0	10
Teacher vs Pupil Structure	6	0	0	0	6
Teacher Activity	2	11	6	4	23
Pupil Activity	2	0	0	1	3
Management/Control	33	0	0	1	34
Size, Composition of Group	1	0	0	0	1
Totals	49	11	11	6	77
Materials					
Preparation of Materials	0	0	1	0	1
Type of Materials	4	0	2	4	10
Teacher Use of Materials	0	4	2	6	12
Pupil Use of Materials	2	0	1	2	5
Totals	6	4	6	12	28
Cognitive					
Teacher Introduction	0	2	0	0	2
Teacher Directions	4	6	0	3	13
Teacher Questioning	0	5	0	0	5
Teacher Selection of Pupils for Discussion	1	2	7	7	17
Teacher Wait for Response	0	0	2	0	2
Teacher Explanation	9	1	2	0	12
Teacher Response to Right/Wrong Answers	23	10	13	1	47
Teacher Summary and Review	0	1	0	0	1
Vocabulary	0	0	2	4	6
Content Focus	4	0	0	1	5
Data	0	10	14	3	27
Pacing/Time	0	0	1	0	1
Pupil Learning	0	0	3	0	3
Pupil Ability	0	0	1	0	1
Other: Testing Procedures	6	0	0	0	6
Other: Record Keeping	4	0	0	0	4
Totals	51	37	45	19	152
Affective					
Teacher Enthusiasm	0	2	0	0	2
Teacher Use of Positive Reinforcement	1	1	1	0	3
Teacher Attitude Toward Pupils	3	0	0	0	3
Pupil Participation/Attention	0	0	2	0	2
Pupil Behavior	0	0	1	0	1
Teacher Image	0	0	1	0	1
Totals	4	3	5	0	12
Physical					
Teacher Movement	0	1	0	0	1
Visual/Auditory	0	0	1	0	1
Classroom as a Whole	0	0	0	1	1
Other: "Details"	0	4	3	1	8
Totals	0	5	4	2	11
Overall Totals	110	60	71	39	280

Table 39 shows what types of items pupils mark at the end of the interview, when they are asked to review all their comments and select the most important things that teachers do to help them learn. Management/Control, Teacher Response to Right/Wrong Answers, and Teacher Explanation receive most emphasis here. Most of the items marked "important" were originally mentioned in Part I, where pupils commented on their own day-to-day classroom experiences. But second graders also paid some attention to their immediate experiences, marking observations they had made about their brief lesson on kinds of sentences as well as observations related to the videotaped lessons.

The categories formed by pupils in Part IV of the interview, when they were asked to group similar items and label their groups, tend to be very specific. A listing of these categories by grade level and ability groups is included in Appendix C-III. On the basis of pupil-formed categories and pupil emphases on particular sub-categories, a series of themes were identified. Table 40 presents these themes with indication of the frequency with which related items are mentioned by different pupil groups.

There are several interesting aspects of these themes to be noted. For example, while all pupil groups mention Management/Control, different ability groups discuss it in different terms. High ability fifth graders say the teacher is keeping the class quiet so they can hear. Middle ability pupils at both second and fifth grade levels say that the teacher is teaching them how to behave. Low ability fifth graders say teachers "think it will teach you a lesson, but it doesn't." This difference in emphasis is also the case in comments about Teacher Selection of Pupils for Discussion. High ability fifth graders say the teacher is giving everyone a chance, middle ability fifth graders note whether or not the teacher calls on pupils with

Table 39

Pupil Concepts of Teaching

Items Marked "Important"

Categories	Grade 2 High	Middle	Low	Totals	Grade 5 High	Middle	Low	Totals	Grand Totals
General Approach									
Instructional Strategy	-	-	1	1	1	-	-	1	2
Teacher Structure	-	-	-	-	4	-	3	7	7
Teacher Activity	-	2	-	2	-	-	-	-	2
Management/Control	2	1	1	4	2	5	3	10	14
Materials									
Type of Materials	-	-	1	1	-	-	1	1	2
Teacher Use of Materials	-	-	1	1	-	-	-	-	1
Pupil Use of Materials	-	1	-	1	1	-	-	1	2
Cognitive									
Teacher Introduction	3	-	-	3	-	-	-	-	3
Teacher Directions	-	-	1	1	-	-	-	-	1
Teacher Selection of Pupils	-	-	1	1	-	-	-	-	1
Teacher Explanation	-	1	-	1	1	6	1	8	9
Teacher Response to Right/ Wrong Answers	1	5	1	7	1	-	6	7	14
Teacher Vocabulary	-	1	1	2	-	-	-	-	2
Content Focus	1	-	-	1	-	-	-	-	1
Data	1	3	1	5	-	1	-	1	6
Pupil Ability	-	1	-	1	-	-	-	-	1
Other (Testing)	2	2	-	4	1	-	-	1	5
Affective									
Other	-	-	2	2	-	-	-	-	2
Part I	5	9	5	19	11	11	12	34	43
Part II	2	3	2	7	-	2	-	2	9
Part III	2	3	3	8	-	-	2	2	10
Part IV	-	1	2	3	-	-	-	0	3

Table 40

Pupil Concepts of Teaching

Themes
Frequency and Distribution
of Items Related to Various Themes

	5th			2nd		
	High	Middle	Low	High	Middle	Low
Teacher Reactions to Inappropriate Behavior	10	5	8	7	2	5
When You Don't Know What to Do (Or How to Do It)	3	4	3	4	6	4
Calling on Pupils	3	6	2	3	2	-
Explaining	1	4	3	2	-	1
Helping Kids Think	8	2	-	2	2	-
Free Time	2	-	3	1	-	4
Keeping Records of Progress	-	2	-	-	1	-
Preparation for Tests	3	-	-	-	-	-
Talking (A Lot)	-	-	4	-	-	1
Teacher Writing	1	4	4	5	7	7
Details	4	2	9	3	-	-
Comparisons	4	2	1	3	2	-

hands raised. Low ability fifth graders and all second graders mention the teacher calling on pupils by name. "Details" refers to comments that include very specific information (and often seemingly irrelevant observations). The low ability fifth graders predominate in this type of comment, mentioning, for example, the following kinds of teacher behavior after the lesson on kinds of sentences: playing with beads (necklace); winking eye; walking across floor. This group also listed the name of every pupil shown in one of the videotaped lessons.

To summarize briefly, pupils do focus more on some aspects of teacher behavior than others, and pupils of both grade levels and all ability groups emphasize cognitive aspects of lessons most heavily when asked to report on their observations of teaching. The sub-categories receiving most emphasis are Management/Control, Teacher Response to Right/Wrong Answers, and Data Selection and Organization. While different pupil ability groups all cite certain themes, they tend to differ somewhat in their perspective of Management/Control techniques and Teacher Selection of Pupils for Discussion.

Comparison of Teacher and Pupil Perceptions

A strict comparison of teacher and pupil responses cannot be made because the tasks performed by teachers and pupils in this study were not identical. However, there were basic similarities between aspects of the tasks, so it is difficult to resist commenting on certain similarities and differences in response patterns.

One comparison that is particularly intriquing to the research team relates to observations of videotaped lessons. In Part III of their interview, pupils were shown Lessons 3 and 4 from the Teacher Judgment Task, and asked to report on what they observed the teacher doing. The reader will recall that several

teachers reacted negatively to Lesson 3 because the teacher said "No" after a pupil error, then proceeded to initial the problem missed, "saving" it for that pupil to solve. The teacher then proceeded to present a series of problems similar in type to that which was missed, in order to help the pupil solve "his" problem. (A transcript of this videotaped sequence is included in Appendix C-I.) Only two of the forty teachers in this study noted that the subsequent problems related to the problem missed, although interviewers frequently probed on this point, asking, "Did the teacher do anything to help Peter solve his problem?" Two pupil groups identified this fact without probing. The high ability fifth grade group noted that "when Peter didn't know, he went on and gave him clues like $2\uparrow = 12$, so $1\uparrow$ would be 11." The low ability fifth grade group noted that "to help Peter, he went right across the row - $7\uparrow$, $6\uparrow$...so he got the hang of it."

This videotaped lesson was introduced a bit differently to pupils than to teachers. Teachers were asked to observe and comment on the videotaped teacher's general approach, identifying approapriate and inappropriate techniques. Pupils were told that:

"In this lesson there is a boy named Peter who misses a problem. The problem is $1\uparrow =$ _____. Do you know what the right answer is? (11) That's right. Well, as you watch the tape, you'll see that Peter can't answer that problem... When the tape is over I'm going to ask you what things you see the teacher doing in this lesson."

However, even with the slight difference in introduction, it is surprising that pupils would seem to be more aware than teachers of the technique this teacher uses to help Peter solve his problem. This particular technique relates closely to the sub-categories of Teacher Response to Right/Wrong Answers and Data Selection and Organization, for in reacting to a pupil error the teacher

provides additional data very selectively. This pupil response, therefore, seems to reinforce the evidence that pupils attend to Data Selection, that is they are aware in this instance of the particular type of problem the teacher chooses to give at a specific point in the lesson.

Another interesting comparison relates to teacher and pupil emphasis on particular sub-categories. The emphases of individual teachers in the Stimulated Recall Task and Teacher Judgment Task were reported in Tables 15 and 20. The most emphasized sub-categories in the Stimulated Recall Task were Teacher Response to Right/Wrong Answers (21)*, Pupil Behavior (15), Pupil Ideas (10), Pupil Participation/Attention (13), and Data Selection and Organization (9). The most emphasized sub-category in the Teacher Judgment Task was Teacher Response to Right/Wrong Answers (12). This teacher emphasis corresponds nicely to pupil emphasis on Teacher Response to Right/Wrong Answers (47)*, Management/Control (the reciprocal of Pupil Behavior?) (34), and Data Selection and Organization (27). (Pupil Participation/Attention received very little comment by pupils (2), which is probably understandable).

Because of this similarity in emphasis, the responses of teachers with high and low pupil gain scores were examined to see whether different patterns existed in use of these sub-categories. The results are presented in Tables 41 and 42. In order to use a measure more similar to that used for pupils, the figures given here are simply the total number of teacher responses coded in a particular sub-category. No statistical analyses have been applied to this data. The Ns differ from group to group, so exact comparisons cannot be made.

*These numbers, of course, do not represent similar items. The 21 means that 21 teachers made coded responses in this sub-category more frequently than other categories. The 47 means that pupil groups mentioned 47 different items that were coded in this sub-category. Both numbers, however, are measures of emphasis.

The best way to study this data seems to be in terms of rank order. The sub-categories are listed in Tables 41 and 42 in the order of emphasis they received from pupils as they responded to similar tasks. None of the teacher groups matches the pupil order of emphasis on either task. On the Stimulated Recall Task all teacher groups give greater emphasis to Pupil Participation/ Attention than do pupils. The teachers with low pupil gain scores rank this sub-category first in order of emphasis. On the Teacher Judgment Task the second grade teachers with high pupil gain scores come closest to matching pupil order of emphasis. No other teacher groups pay anywhere near equal attention to Data Selection and Teacher Response to Right/Wrong Answers.

To summarize briefly, there are both similarities and differences between teacher and pupil responses to similar tasks. Because the tasks were not completely equivalent, no statistical comparisons of teacher and pupil responses have been made.

Table 41

Teacher Use of Selected Sub-Categories

Stimulated Recall Task

	Second Grade		Fifth Grade	
	High Pupil Gain Scores (N=9)	Low Pupil Gain Scores (N=10)	High Pupil Gain Scores (N=10)	Low Pupil Gain Scores (N=10)
Teacher Response to Right/Wrong Answers	24	35	39	30
Pupil Behavior	29	27	10	22
Data Selection and Organization	20	25	37	29
Pupil Participation/Attention	28	38	30	41

Table 42

Teacher Use of Selected Sub-Categories

Teacher Judgment Task

	Second Grade		Fifth Grade	
	High Pupil Gain Scores (N=5)	Low Pupil Gain Scores (N=10)	High Pupil Gain Scores (N=8)	Low Pupil Gain Scores (N=10)
Data Selection and Organization	10	12	16	14
Teacher Response to Right/ Wrong Answers	13	25	29	27
Pupil Participation/Attention	8	14	9	15
Pupil Behavior	0	0	1	0

CHAPTER FIVE

Variables for Further Study

It is very tempting at this point to begin trying to interpret the findings reported here, spinning explanations of the relationships that have been uncovered, using threads of theory and folk wisdom in a rich blend, as befits a preliminary attempt to create comprehensible patterns in a seldom-studied field. The urge to rationalize away the fact that many expected relationships did not materialize is also remarkably strong. The purpose of this study, however, is to generate new and promising variables for further study. Therefore, we leave the reader to speculate about the findings, choosing his/her own favorite concepts to explain the relationships and trends (or, to explain away the lack of relationships, if that is the preferred method of approach to the problem). We turn our own attention at least for the duration of this report to the task of identifying promising perspectives that might guide further research in the area of teacher and pupil perceptions of classroom interaction. Two basic perspectives will be discussed. The first relates to the thinking processes used by teachers and pupils in reflecting on teaching and learning. The second relates to the focus of attention teachers and pupils have as they observe and participate in classroom interaction. Within each perspective several variables will be identified as worthy of further study.

Thinking Process

When teacher and pupil perceptions of classroom interaction, as explored in this study, are viewed from the perspective of the thinking processes used in reflecting on teaching and learning, four variables stand out, begging for further investigation. These are logical/critical thinking, comparative thinking, negative thinking, and amount of input accepted or sought during information processing. Each of these variables will be discussed briefly,

reviewing the findings that indicate its potential value for further investigation, and suggesting some questions for further study.

Logical/critical thinking. Three separate significant findings relate to the logical and critical thinking exhibited by teachers. In the Teacher Sort Task teachers with high pupil gain scores formed more single-element groups than teachers with low pupil gain scores ($p < .05$). The tendency to form single-element groups is a phenomenon related to the development of logical thinking in children. Inhelder and Piaget, in The Early Growth of Logic in the Child, report that young children are generally unwilling to do this, and it is a more common response at later stages of cognitive development. This finding may indicate that teachers with high pupil gain scores have a tendency to use a higher level of logical thinking when they consider pupil characteristics.

In the Teacher Judgment Task, fifth grade teachers with high pupil gain scores indicated that they needed more information to make a judgment more often than did teachers with low pupil gain scores ($p < .05$), and fifth grade teachers with low pupil gain scores made categorical versus situational comments more often than did teachers with high pupil gain scores ($p < .025$). Both of these types of responses are frequently included on measures of critical thinking. In combination, these two findings may indicate a tendency for teachers with high pupil gain scores (at the fifth grade level, at least) to demonstrate a greater use of critical thinking in making judgments about teaching.

In studying the variable of logical and critical thinking further, some questions that might be pursued include:

1. Do more general measures of logical and critical thinking discriminate among teachers differently than tasks, such as those used in this study, that are directly related to an immediate instructional experience?
2. Do characteristics related to the development of categorizing ability other than use of single-element categories (e.g., use of hierarchical category systems) also relate to teacher difference in pupil gain scores?
3. In teacher use of critical thinking skills in reflecting teaching more closely related to pupil achievement at the fifth grade level than at the second grade level?

Comparative thinking. Three separate findings relate to teacher use of comparative thinking in reflecting on teaching and learning. Two of these findings are significant, and one approaches significance. All three are associated with the Teacher Judgment Task.

Teachers with low pupil gain scores made significantly more comparative statements in commenting about the videotaped teachers than did teachers with high pupil gain scores (Table 21, $p < .01$). Teachers who used varied teaching styles made significantly more comparative statements than did teachers who used standard styles (Table 32, $p \approx .05$). Teachers with high pupil gain scores made more comments comparing the videotaped teachers to themselves (Table 21, $p < .10$).

It is difficult to reconcile these findings to form a consistent picture of the relationship of comparative thinking to teacher effectiveness or teaching style. As noted in the literature review, Schroder's theory is that people with "process ability" have more perceptual categories and more

rules or concepts for organizing information. Would it follow that comparative thinking is typical of people with less process ability - that they relate event to event (O↔O) rather than relating each event to a higher level concept (O↗‾↖O)? This might explain differences between teachers with high and low pupil gain scores on overall tendency to compare. But we need some further explanation for the fact that teachers with higher gain scores seem to make more comparisons to self.

The problem is intriguing, and seems to deserve further investigation. In order to study this in more detail, a more highly structured interview could be used, where teachers are asked more specifically to make comparisons among teachers whose lessons they observe.

In studying the variable of comparative thinking further, some questions that might be pursued include:

1. Are there differences between the kinds of comparisons made by different teachers (high vs. low pupil gain scores, varied vs. standard teaching styles) when they observe a series of segments of classroom interaction, e.g., positive-negative comparisons vs. objective comparisons, comparisons based on cognitive vs. affective aspects of the lesson, etc.?
2. When teachers compare videotaped teachers to themselves, what types of comparisons do they make (e.g., positive-negative), and are different types of comparisons related to pupil gain score or teaching style?
3. When teachers compare videotaped teachers to themselves, what subcategories do they focus on? are these closely related to the subcategories they focus on in discussing segments of their own teaching in stimulated recall tasks?

4. Is there a relationship between teacher tendency to compare teachers whom they observe and their tendency to compare pupils whom they observe and/or pupils with whom they work?

Negative thinking. Five separate findings relate to use of "negative" thinking in reflecting upon learning. Three of these findings are significant and derive from the Pupil Self-Perception Task. One derives from the Pupil Concepts of Teaching Task, and was not tested for significance. The last derives from the Teacher Judgment Task, and it also was not tested for significance.

When responses to the self-perception inventory associated with both reading and math lessons were combined, second grade pupils made significantly more negative self-ratings than did fifth grade pupils (Table 34, $p < .01$). When responses after the reading lesson were considered alone, pupils in classes with low pupil gain scores made significantly more negative self-ratings than pupils in classes with high pupil gain scores (Table 35, $p < .05$). This was true for second grade pupils considered alone as well ($p < .01$).

It is important to note here that the teachers selected for study (the known sample) varied on the basis of entering pupil achievement. Classes with low average pupil gain scores on the ETUs included a balanced representation of classes with high, medium, and low pupil achievement based on E.T.U. test scores. The same was true for classes with high average pupil gain scores. So the negative pupil self-ratings being discussed here are not the result of low general achievement in reading.

The two related findings that were not tested for significance were initially viewed as interesting, but not critical, differences. They have gained in importance as a result of reflection on the findings on negative

thinking cited above. In the Pupil Concepts of Teaching Task, the low ability fifth graders made thirteen negative comments out of the forty-nine observations recorded (Table 37). All but one of these comments were made in Part I of the interview, when general observations were being discussed. No other pupil group made any negative comments. In fact, the question asked called for positive comments. (What things do teachers do that help you to learn?).

In the Teacher Judgment Task, second grade teachers with both high and low pupil gain scores made more negative judgments than fifth grade teachers (Table 22). Second grade teachers also made proportionately more negative judgments than fifth grade teachers, when type of comment was compared to total observations made (34.5% vs. 29.4% - Table 18). This was the only type of response where second and fifth grade teachers differed very much.

Together these findings begin to form an intriguing pattern. Second grade pupils make more negative self-ratings than fifth grade pupils, and second grade teachers seem to make more negative judgments about other teachers than do fifth grade teachers. Is this a developmental phenomenon? Is the thinking of second grade teachers influenced by the negative thinking of their pupils, or vice versa? Do second grade teachers perhaps make more negative judgments about their pupils than fifth grade teachers? There is much room for speculation.

In another vein, pupils in classes with low pupil gain scores make more negative self-ratings after reading lessons than pupils in classes with high pupil gain scores. Fifth grade pupils of low ability seem to make a high proportion of negative comments in their observations about teaching. Would pupils in classes with low pupil gain scores also make more negative observations about teachers than pupils in classes with high pupil gain scores, assuming they were given an opportunity?

In studying the variable of negative thinking further, some questions that might be pursued include:

1. Are the negative self-ratings of pupils (second grade vs. fifth grade, classes with low pupil gain scores vs. classes with high pupil gain scores) differentially associated with general statements, i.e., I get nervous when I have to go to the board, as opposed to statements specific to a particular lesson, i.e., I couldn't answer any of the questions in this lesson?
2. Do second grade teachers use more negative-sounding terms than fifth grade teachers in describing the bases on which they group pupils in the Teacher Sort Task? Do teachers with low pupil gain scores use more negative descriptions of pupil grouping than teachers with high pupil gain scores?
3. When pupils are asked to observe and judge segments of lessons on videotape, do different types of pupils (second vs. fifth graders, classes with high pupil gain scores vs. classes with low pupil gain scores) make varying amounts of negative comments in reporting their observations?

Amount of input. Five separate findings relate to the amount of input accepted or sought during information processing. None of these findings is significant in itself. Four of them combined to form an interesting trend in the Stimulated Recall Task. One was an interesting phenomenon noted in connection with the Pupil Concepts of Teaching Task.

In the Stimulated Recall Task teachers with low average pupil gain score consistently mentioned more items related to their decisions (Table 16). This occurred in discussing considerations related to the decision, information used in making the decision, cognitive aspects of the lesson, and affective

aspects of the lesson. (The one exception to this trend was that fifth grade teachers of high and low pupil gain scores had roughly similar mean scores for number of references to cognitive aspects of the lesson: 27.4, high, and 26.9, low). In the Pupil Concepts of Teaching Task the low ability fifth grade group made more than twice as many comments as other pupil groups citing "details" in reporting on their observations of lessons in which they participated and which they viewed on videotape (Table 40). These observed details frequently seemed quite irrelevant to the instruction being observed.

These findings can be viewed as related in terms of theories of information processing, which suggest that only limited amounts of input can be dealt with effectively at any given time. As Philip Jackson pointed out in Life In Classrooms, the typical classroom is a booming, bustling environment that generates countless conflicting demands for attention. Do effective teachers and learners perhaps screen out more items, attending only to the limited amount of information which they are able to process? Do they possibly screen more selectively as well, ignoring some types of information and accepting others? Or are teachers with low pupil gain scores persons who happen to be more perceptive individuals generally, and does this perhaps work to their disadvantage in certain aspects of instruction? The fact that teachers with low pupil gain scores did not make consistently more observations than teachers with high pupil gain scores on the Teacher Judgment Task seems to suggest that the latter possibility is not too probable.

In studying further the variable of amount of input sought or accepted in information processing, some questions that might be pursued include:

1. What procedures can be devised to measure more accurately the amount and types of information that teachers perceive or do not perceive in comparison to those they consciously ignore or attend to?

2. Do teachers who appear to seek or accept less input mention as wide a variety of types of input as those who appear to seek or accept more input, i.e., is the range as well as the amount of input restricted? How do differences of this nature relate to pupil gain scores or teaching style?

Comparison of variables. The four variables proposed for further study relative to the thinking processes used in reflecting on teaching and learning vary a good deal in terms of their relationships to existing theory and research, the ease with which they can be tackled, the time required to acquire useful information, and the practical use to which the information might be put. These factors should be taken into account in determining priorities for further study. Figure I on the following page presents a comparison of variables on the basis of these factors.

Focus of attention

When teacher and pupil perceptions of classroom interaction, as examined in this study, are considered in terms of focus of attention, four additional variables stand out as promising topics for further study. These are teacher and pupil attention to cognitive aspects of lessons, teacher and pupil attention to instructional process, teacher and pupil attention to specific types of interactive behavior (Teacher Response to Right/Wrong Answers, Management Control and Pupil Behavior, Data Selection and Organization, and Pupil Participation/Attention), and teacher attention to specific types of pupil response during a lesson. Each of these variables will be discussed briefly, summarizing the findings that suggest its inclusion in further studies, and proposing some questions to direct further investigation.

Figure I
Factors Related to Priorities for Further Study

Variable	Theoretical Basis	Measures	Data Collection Procedures	Pratical Application of Further Knowledge
Logical/Critical Thinking	Findings could be readily related to Piagetian theory and to other research on critical thinking	Measures exist. Standard tests of critical thinking could be used. Tasks from this study could be used with some refinement.	Data could be collected with procedures similar to this study. (Short term study)	Further information could be used to devise tests for entry into teaching.
Comparative Thinking	Difficult at this point to explain probable reasons for relationships. Findings might be related to Schroder's theory of process ability.	Measures exist. The tasks from this study could be used with some refinement.	Data from the present study could be reanalyzed from a new perspective. Interviews could be more highly structured and additional data collected in similar fashion. (Short term study)	This is an area that might be susceptible to training, and further information could lead to suggestions for teacher training.
Negative Thinking	Findings can be related to theory and research on the development of self-perception, e.g. the effects of the "significant other".	Measures exist. Tasks from this study could be used with some refinement.	Data from the present study could be reanalyzed from a new perspective. Some new data could be collected with similar procedures. (Short term study)	It is difficult to see how information might be used to screen or train teachers. It could contribute to knowledge of children, and thus eventually affect instruction.
Amount of Input	Findings could be readily related to theory and research on information processing.	New measures would need to be developed.	New data collection procedures need to be developed, and new data collected. (Long term study)	Information of this type could eventually contribute a great deal to our knowledge base, and would probably suggest both screening and training procedures

Teacher and pupil attention to cognitive aspects of lessons. Three separate findings relate to the variable of attention to cognitive aspects of lessons. Two are significant and one approaches significance. In the Teacher Sort Task teachers with high pupil gain scores used cognitive bases for grouping pupils more frequently than teachers with low pupil gain scores (Table 9, $p < .10$). In the Pupil Concepts of Teaching Task all pupil groups mentioned cognitive aspects of teaching more than any other category, and distribution of comments among categories was not random (Table 37, $p < .005$). Different pupil ability groups mentioned cognitive aspects of lessons in differing proportions, with middle ability groups giving it the most weight and low ability groups weighting it less heavily, and these differences also were not random ($p < .025$).

In addition, some nonsignificant findings combine to show an interesting trend. On both the Stimulated Recall Task and the Teacher Judgment Task, fifth grade teachers with high and low pupil gain scores show almost no difference in number of references to cognitive aspects of the lesson (Tables 16 and 22). Second grade teachers with high and low pupil gain scores reverse their positions from one task to the other, those with low pupil gain scores making slightly more references to cognitive aspects in the Stimulated Recall Task (Table 16), and those with high pupil gain scores making slightly more references to cognitive aspects in the Teacher Judgment Task (Table 22). Neither of these differences is significant.

It appears, then, that teachers with high and low pupil gain scores differed in their attention to cognitive aspects of pupil behavior (Teacher Sort Task), but not in their attention to cognitive aspects of teacher behavior (Stimulated Recall and Teacher Judgment Tasks). And while all pupil

groups gave much attention to cognitive aspects of teacher behavior, there was a difference between ability groups with respect to how strongly dominant this attention was.

These findings suggest that slight variations of the tasks used in this study might provide more detailed information about teacher and pupil differences in this area. In studying the variable of teacher and pupil attention to cognitive aspects of lessons further, some questions that might be raised include:

1. If stimulated recall interviews with teachers focused on pupil behavior rather than teacher behavior (asking questions like "What do you think pupils were thinking/feeling at that point in the lesson?"), would teachers with high and low pupil gain scores differ with respect to their attention to cognitive vs. affective aspects of pupil behavior?
2. If stimulated recall interviews with pupils shifted the focus on teacher behavior (asking questions like "What were you thinking/feeling when the teacher did that?"), would pupils of different ability levels differ with respect to their attention to their own responses (cognitive vs. affective)?
3. If teachers were asked to view the videotaped lessons of other teachers and focus on pupil behavior, would teachers with high and low pupil gain scores differ with respect to their attention to cognitive vs. affective aspects of the behavior of other people's pupils?

Teacher and pupil attention to instructional process. Three separate findings relate to the variable of attention to instructional process. In the Stimulated Recall Task, when discussing considerations and information used, teachers with high pupil gain scores tended to comment on instructional

process more frequently than those with low pupil gain scores (Table 17, $p \approx .15$). This trend was repeated in the Teacher Judgment Task, though again the difference was not significant (Table 22). Another interesting, related finding was that on the Stimulated Recall Task, all teachers framed their comments to make it clear that their decisions were overwhelmingly about instructional process (Table 17). In effect, their perspective was that they gathered information about pupils to make decisions about process.

In the Pupil Concepts of Teaching Task pupils as well emphasized instructional process much more heavily than pupil characteristics, behavior or activities. This was true for each of the three parts of the interview where pupils reported on their observations, as noted below:

	Number of Process Categories Mentioned	Number of Pupil Categories Mentioned
Part I - General Observations	144	15
Part II - Participant Observations	44	0
Part III - Videotape Observations	42	8

It is difficult to tell how much of this emphasis resulted from the working of the task, for pupils were asked to talk about what teachers did. Still, it seems reasonable to expect that pupils would be attentive to the instructional process. And the pupil observations in relation to "Peter's Problem" seem to support this view.

If the tasks used in this study were restructured slightly, it would be possible to examine the nature of teacher and pupil attention to instructional process in more detail. Some questions considered are:

1. Under what circumstances do teachers discuss interactive decisions as if they were about pupils rather than process? Under what

circumstances do they mention instructional process as a consideration in making the decision, rather than as the substance of the decision itself? Do these circumstances differ for teachers with high and low pupil gain scores?

2. If pupils were asked (in a stimulated recall interview and/or a videotaped observation of other children involved in a lesson) what they saw happening in the classroom, would the proportion of their comments devoted to instructional process shift radically? Would this proportion differ according to differences in pupil ability?

Teacher and pupil attention to specific types of interactive behavior. No tests of significance were run on the data related to the variable of attention to specific types of interactive behavior, because the teacher and pupil tasks were not similar enough to make statistical comparisons. However, there were corresponding tendencies for both teachers and pupils to emphasize Teacher Response to Right/Wrong Answers, Data Selection and Organization, and Management/Control (pupils) or Pupil Behavior (teachers), as noted in Tables 15, 20, 41, and 42. Teachers place a good deal of emphasis also on Pupil Participation/Attention. At both second and fifth grade levels on both the Stimulated Recall and Teacher Judgment Tasks, teachers with low pupil gain score mention the Pupil Participation/Attention sub-category more frequently than teachers with high pupil gain scores.

These findings suggest that this aspect of teacher and pupil perceptions should be examined more closely, restructuring tasks to allow for a strict comparison of teacher and pupil responses. Some questions to be pursued include:

1. When individual teachers and individual pupils engage in stimulated recall interviews after lessons in which they have participated,

are there differences between the amount of correspondence between teacher and pupil in emphasis on specific sub-categories, related to teacher differences in pupil gain scores and/or pupil differences in ability level?

2. When teachers in stimulated recall interviews are asked to comment particularly on Pupil Participation/Attention (e.g., What did you observe at this point about pupil participation and attention?), are there differences between teachers regarding the types of cues they refer to and the aspects of participation that they mention, and are these differences related to teacher differences in pupil gain scores?

Teacher attention to specific types of pupil responses during a lesson. Three findings combine to form an interesting trend in relation to the variable of teacher attention to specific types of pupil response. In the Teacher Sort Task, teachers with high pupil gain scores used more unique bases, more situational bases, and more bases relating to pupil performance on a given task ($p = .1274$) than did teachers with low pupil gain scores (Tables 10 and 11). This suggests a tendency for teachers with high pupil gain scores to be more alert to pupil responses that are related to the content or goals of the immediate lesson.

In order to study this variable more closely, the rather open Teacher Sort Task could be revised to resemble a Q-sort task, in which teachers first identified the major tasks required of pupils in the lesson, then grouped pupils according to their performance of each task. Teacher groupings could then be compared to other data on pupil performance of these tasks (e.g., observer ratings, written evidence) to determine how closely teacher observations corresponded to other evidence. Questions to be asked in this type

of further study of teacher attention to specific types of pupil responses during lessons include:

1. How completely do teachers identify the basic tasks of a given lesson? Are differences in teacher ability to do this related to pupil gain scores?
2. How accurately do teachers group pupils in relation to performance on the basic tasks of a given lesson? Are differences in teacher accuracy related to pupil gain scores?
3. What evidence do teachers use to make these groupings? Are differences in the type of evidence collected (e.g., written vs. observed) related to pupil gain scores?

Further study of variables. Each of the four variables suggested for further study in relation to focus of attention can be examined readily over a short term by slight revisions of the tasks used in this study, and by following similar patterns of data collection. These variables emerge largely from a comparison of teacher and pupil responses to these tasks, and because they build on pupil perceptions, they carry a high priority for further study.

Conclusion

This study was designed to explore a wide variety of aspects of teacher and pupil perceptions of classroom interaction in order to generate new variables for further study of teacher effectiveness. A "known sample" of teachers were interviewed individually and responded to several tasks designed to gather information on what they noticed about pupils during a lesson, what decisions they were aware of making, and what they observed in the lessons of other teachers. Several small groups of pupils were interviewed to gather information on what pupils noticed teachers doing. They reported on this on the basis of their own general experience, after a short microteach lesson in which they participated, and after watching two videotapes of short lessons taught to other pupils.

Several correlations were found between teacher responses to the various tasks and average pupil gain scores on Experimental Teaching Units. A very few correlations were found between teacher responses and observed teaching style. Some significant patterns were found in pupil responses to the various tasks. The correlations and trends found led to recommendations for further study centering on two basic areas--thinking processes, and focus of attention in classroom interaction.

In regard to the correlations related to thinking processes, it is important to note that these are probably not causal relationships. That is, the fact that teachers with high average pupil gain score indicate more frequently that they need additional information in order to make a judgment does not mean that if teachers seek more information before making judgments, pupil achievement will rise. There is probably a mediating variable involved, e.g., teachers with well-developed information processing

skills tend to seek more information and also tend to get high average pupil learning. If this is indeed a mediating variable it will be important to consider whether these skills can be learned, or whether this is a variable that could be used for screening prospective teachers. For this reason, the recommended further study related to thinking processes involves some rather complex long-term questions as well as some short-term projects.

In regard to the findings related to focus of attention, it is well to reiterate one important finding. Teachers with high pupil gain scores tended to emphasize cognitive aspects of pupil behavior while the teachers with low pupil gain scores gave slightly more attention to affective aspects. This finding coincides with a number of recent studies, such as Kaskowitz and Stallings (1975). When this information is combined with the highly significant pattern of pupil attention to cognitive aspects of teacher behavior, it seems clear that this area of teacher and pupil perceptions of classroom interaction merits a good deal of further study.

In addition to recommendations for further research, this report has outlined a variety of procedures for collecting information from teachers and pupils. These techniques were also in some respects exploratory, and it is heartening to note that both teachers and pupils found the tasks interesting and involving. Of equal importance is the fact that the tasks were instrumental in getting a variety of analysable information from both pupils and teachers. Further refinement of these tasks should prove fruitful.

The purpose of this study was to examine as large a variety of variables as possible in order to select the best bets for further study. Many of the variables touched upon briefly in this analysis are highly provocative. It is our hope that all of these will eventually be studied in more depth.

BIBLIOGRAPHY

Beckman, L. Effects of students' performance on teachers' and observers' attributes of causality. Journal of Educational Psychology, 1970, 61, 76-82.

Beckman, L. Teachers' and Observers' perceptions of causality for a child's performance. Journal of Educational Psychology, 1973, 65, 198-204.

Beez, W. Influence of biased psychological reports on teacher behavior and pupil performance. Proceedings of the 76th Annual Convention of the American Psychological Association, 1968, 605-606.

Berkowitz, L. Social motivation. In G. Lindzey and E. Aronson. (eds.), Handbook of social psychology, 2nd ed., Vol. 3. Reading, Massachusetts: Addison-Wesley, 1969.

Borg, W., Kelly, M., Langer, P., and Gall, M. The mini-course: A micro-teaching approach to teacher education. Beverly Hills, California: MacMillan Educational Services, 1970.

Brophy, J. and Good, T.L. Teacher-student relationships. New York: Holt, Rinehart and Winston, 1974.

Bropy, J. and Good, T.L. Teacher's communication of differential expectations for children's classroom performance: Some behavioral data. Austin, Texas: University of Texas, Texas Research and Development Center for Teacher Education, Report no. 25, September, 1969.

Burnham, J., Effects of experimenters' expectancies on children's ability to learn to swim. Unpublished masters thesis, Purdue University, 1968.

Cahen, L.S. An experimental manipulation of the halo effect. Unpublished doctoral dissertation, Stanford University, Stanford, California, 1966.

Coleman, J., Campbell, E., Hobson, C., McPartland, J., Mood, A., Winifield, F., and York, R. Equality of educational opportunity. Washington, D.C.: U.S. Department of Health, Education & Welfare, 1966.

Crist, J., Marx, R., and Peterson, P. Teacher behavior in the organizational domain. Stanford, California: Stanford University. Stanford Center for Research and Development in Teaching, N.I.E. Contract No. NE-C-00-3-0061, 1974.

deCharms, R., Personal Causation. New York: Academic Press, 1965.

deCharms, R. and Bridgeman, A. Leadership, compliance and group behavior. St. Louis, Missouri: Washington University, Technical Report No. 9 ONR Project NONR 816 (11), 1961.

deCharms, R., Motivation change in low-income black children. Paper presented at the annual meeting of the American Educational Research Association, Minneapolis, 1970.

Deutsch, M. Field theory in social psychology. In G. Lindzey and E. Aronson (eds.). Handbook of social psychology, 2nd ed., Vol. 1. Reading, Massachusetts Addison-Wesley, 1968.

Dunkin, M. and Biddle, B. The study of teaching. New York: Holt, Rinehart and Winston, 1974.

Ehman, L. A comparison of three sources of classroom data: Teachers, students and systematic observation. Paper presented at the annual meeting of the American Educational Research Association, Minneapolis, 1970.

Elashoff, J. D. and Snow, R. E. (eds.). Pygmalion reconsidered. Worthington, Ohio: Charles A. Jones, 1971.

Emmer, E. The effect of teacher use of student ideas on student verbal initiation. Unpublished doctoral dissertation, University of Michigan, 1967.

Flanders, N.A. Analyzing teaching behavior. Reading, Massachusetts: Addison-Wesley, 1970.

Fleming, E. and Anttonen, R. Teacher expectancy of my fair lady. American Educational Research Journal, 1971, 8, 241-52.

Gage, N. L. Accuracy of social perception and effectiveness in interpersonal relationships. Journal of Personality, 1953, 22, 128-141(a).

Gage, N. L. Explorations in teachers' perceptions of pupils. Journal of Teacher Education, 1958, 9, 97-101.

Gage, N. L. Explorations in the understanding of others. Educational Psychological Measurement, 1953, 13, 14-26(b).

Gage, N. L. Teacher effectiveness and teacher education: The search for a scientific basis. Palo Alto: Pacific Books, 1972.

Gage, N. L. and Cronbach, L. J. Conceptual and methodological problems in interpersonal perception. Psychological Review, 1955, 62, 411-422.

Gage, N. L., Leavitt, G. F., and Stone, G. C. Teachers' understanding of their pupils and pupils' ratings of their teachers. Psychological Monographs, 1955, 69, No. 21 (Whole No. 406).

Gage, N. L. and Suci, G. Social perception and teacher-pupil relationships. Journal of Educational Psychology, 1951, 42, 144-152.

Getzels, J. W. A social psychology of education. In G. Lindzey and E. Aronson (eds.). The handbook of social psychology 2nd ed., Vol. 5. Reading, Massachusetts: Addison-Wesley, 1969.

Glasser, W. Schools without failure. New York: Harper and Row, 1969.

Good, T. L. Which pupils do teachers call on? Elementary School Journal, 1970, 70, 190-198.

Good. T. L. and Brophy, J. Looking in classrooms. New York: Harper and Fow, 1973.

Goslin, D. School in contemporary society. Glenview, Illinois: Scott, Foresman, 1965.

Hansen, J. and Warner, R. Enviromental press, student needs and academic adjustment. Journal of Educational Research, 1970, 63, 404-406.

Hartly, M. and Hoy, W. "Openness" of school climate and alienation of high school students. California Journal of Educational Research, 1972, 23, 17-24.

Harvey, O., Prother, M., White, B. and Hoffmeister, J. Teachers' beliefs, classroom atmosphere and student behavior. American Educational Research Journal, 1968, 5, 151-66.

Heider, F. The psychology of interpersonal relations. New York: Wiley, 1958.

Henry, J. Attitude organization in elementary school classrooms. American Journal of Orthopsychiatry, 1957, 27, 117-133.

Henry, J. Docility, or giving teacher what she wants. Journal of Social Issues, 1955, 2, 33-41.

Holt, J. How children fail. New York: Pitman, 1964.

Howland, C. I., Janis, I., and Kelley, H.H. Communication and persuasion. New Haven: Yale University Press, 1953.

Illich, I. De-schooling society. New York: Harper and Row, 1971.

Inhelder, B. and Piaget, J. The early growth of logic in the child. New York: Harper and Row, 1964.

Jackson, P. Life in classrooms. New York: Holt, Rinehart and Winston, 1968.

Jackson, P. and Lahaderne, H. Inequalities of teacher-pupil contacts. Psychology in the schools, 1967, 4, 204-208.

Johnson, T., Feigenbaum, R. and Weiby, M. Some determinants and consequences of the teacher's perception of causation. Journal of Educational Psychology, 1964, 55, 237-46.

Jones, E. E. Attribution: Perceiving the causes of behavior. New York: General Learning Corporation, 1972.

Jones, E. E. Patterns of performance and ability attribution: Primacy effect. Journal of Personality and Social Psychology, 1971, 20, 166-175.

Kaskowitz, D. and J. Stallings. An assessment of program implementation in project follow-through. Paper presented at the annual meeting of the American Educational Research Association, Washington, 1975.

Kelley, H. H. Attribution theory in social psychology. In D. Levine (ed.), Nebraska Symposium on Motivation. Lincoln, Nebraska: University of Nebraska Press, 1967.

Kozol, J. Death at an early age. Boxton: Houghton-Mifflin, 1967.

Lahaderne, H. Attitudinal and intellectual correlates of attention: A study of four sixth grade classrooms. Journal of Educational Psychology, 1968, 59, 320-324.

McGuire, W. J. The nature of attitudes and attitude change. In G. Lindzey and E. Aronson (eds.). Handbook of social psychology, 2nd ed., Vol. 3, Reading, Massachusetts: Addison-Wesley, 1969.

Merton, R. The self-fulfilling prophecy. Antioch Review, 1948, 8, 193-210.

Palo Alto Unified School District. Evaluation report on the "schools without failure" program. Palo Alto, California: Ventura Schcol, 1972.

Reimer, E. School is dead. Garden City, New York: Doubleday, 1971.

Rist, R. Student social class and teacher expectations: The self-fulfilling prophecy in ghetto education. Harvard Educational Review, 1970, 40, 411-451.

Rosenshine, B. Enthusiastic teaching: A research review. School Review, 1970, 78, 499-514.

Rosenshine, B. Teaching behaviors and student achievement. London, England: National Foundation for Educational Research (England & Wales), 1971.

Rosenthal, R. and Jacobson, L. Pygmalion in the classroom: Teacher expectation, and pupils' intellectual development. New York: Holt, Rinehart and Winston, 1968.

Rowe, M. Science, silence, and sanctions. Science and children, 1969, 6, 11-13.

Ryans, D. Characteristics of teachers: Their description, comparison, and appraisal. Washington, D.C.: American Council on Education, 1960.

Ryans, D. Teacher behavior theory and research: Some implications. Journal of Teacher Education, 1963, 14, 274-293.

Schrank, W. The labeling effect of ability grouping. Journal of Educational Research, 1968, 62, 51-52.

Taba, H. Teaching strategies and cognitive functioning in elementary school children. Cooperative Research Project No. 2404. San Francisco, California: San Francisco State College, 1966.

Taguiri, R. Person perception. In G. Lindzey and E. Aronson (eds.). Handbook of social psychology, 2nd ed., Vol. 3. Reading, Massachusetts: Addison-Wesley, 1969.

Walberg, H. J. and Ahlgren, A. Predictors of the social environment of learning. American Educational Research Journal, 1970, 7, 153-167.

Waller, W. The sociology of teaching. New York: Wiley, 1932.

Weiner, B. Achievement motivation and attribution theory. New York: General Learning Corporation, 1974.

Willis, S. and Brophy, J. Origins of teachers' attitudes toward young children. Journal of Educational Psychology, 1974, 66, 520-529.

Wolfson, B. and Nash, S. Perceptions of decision-making in elementary school classrooms. Elementary School Journal, 1968, 69, 89-93.

Zajonc, R. Cognitive theories in social psychology. In G. Lindzey and E. Aronson (eds.), Handbook of social psychology, 2nd ed., Vol. 1. Reading, Massachusetts: Addison-Wesley, 1968.

APPENDIX A

CODING SYSTEMS

Part I.

Sample Codings:

Basic Category System

Sample Codings: Basic Category System

I. General Approach

A. Goals

1. Representative statements from Teacher Judgment Task

a. He was leading toward basic directions (of arrows)

b. I didn't feel any real direction or point to the lesson

c. I'd like to know his objective

2. Representative statements from Stimulated Recall Task

a. I wanted to be sure kids achieved the objective at the point I wanted

b. From there I really only wanted to go on to letting them see ways to expand sentences.

3. Representative statements from Pupil Concepts of Teaching Task

B. Instructional Strategy

1. Representative statements from Teacher Judgment Task

a. The kids are showing him the operations

b. He wrote problems on the board and they had to figure out the answer

c. The kids discover the operations

d. The kids show how the arrows go

2. Representative statements from Stimulated Recall Task

a. I violated the rules of using only cards - I talked too much

b. That's the way I teach reading - It's called a "miscue approach"

3. Representative statements from Pupil Concepts of Teaching Task

a. Write on board and leave them on board so you can look at them later

b. Spelling test- gives you sentences- says them over if you need it

c. Didn't show them how to do the problems- didn't help them

d. Kept giving problems and asking "what's this?"

C. Sequence of Procedures

1. Representative statements from Teacher Judgment Task

a. She started with "10 up", then let the kids go any direction

2. Representative statements from Stimulated Recall Task

a. I thought maybe we should do a couple of sentences before we got involved with the picture

b. I was trying to decide whether to add more words to the sentence then act it out, or act it out first to see if they'd get more ideas

c. I did this as preliminary for follow-up

d. I like to have children consider purpose so they know what they can do with this

3. Representative statements from Pupil Concepts of Teaching Task

D. Teacher vs Pupil Structure

1. Representative statements from Teacher Judgment Task

a. He's giving them options

b. She also structured

c. The teacher structures the lesson for the pupil

2. Representative statements from Stimulated Recall Task

a. He had an idea he wanted to try out (a game) and the other children felt the same way - If he was willing to try, I was willing to let him do it.

3. Representative statements from Pupil Concepts of Teaching Task

a. Has free time if you get your work done - learn to get work done fast

b. No free time to do what you want or catch up

c. Free time work has to be quiet so the others can finish and think

E. Teacher Activity

1. Representative statements from Teacher Judgment Task

   a. She talks a lot

2. Representative statements from Stimulated Recall Task

   a. This is typical - I'm going around during seatwork

3. Representative statements from Pupil Concepts of Teaching Task

   a. Gives us work to do

   b. Talking about certain things - sentences

   c. Writing numbers, and arrows on the chalkboard

   d. Teacher didn't have to write problems down

F. Pupil Activity

1. Representative statements from Teacher Judgment Task

   a. They're working individually - there's no sharing

   b. There's physical involvement of the pupils

2. Representative statements from Stimulated Recall Task

   a. Kelly was being more active than usual - decided then to get them up to underline words

   b. I had my own sentences but I wanted kids to write their own sentences

   c. They had expanded two simple sentences

   d. I started to read the sentence, then realized that I always have children read it.

3. Representative statements from Pupil Concepts of Teaching Task

   a. We write stories about what we're doing

   b. We write stories about pictures

   c. Kids doing writing

G. Management/Control

1. Representative statements from Teacher Judgment Task

   a. He has good class control

2. Representative statements from Stimulated Recall Task

   a. Class was getting too noisy. I said "I can't go on" to get children to settle down

   b. I was passing out materials, so I said, "When you get it, put your name on it." - so they're busy doing something

   c. I realized they were still acting up and pointed out that someone couldn't hear.

   d. Usually I just say, "O.K., go on back to your seat"

3. Representative statements from Pupil Concepts of Teaching Task

   a. Principal is very strict if you get sent to office - makes you mad, not want to learn

   b. When kids are goofing around, she sends them outside to do their work without explaining - it makes them want to learn

   c. Have kids write something 100 times if they talk - helps them listen, but dumb thing to do

   d. Always telling them to do something - so they wouldn't be fidgety

H. Seating Arrangement

1. Representative statements from Teacher Judgment Task

   a. The kids are sitting in rows close to the board

2. Representative statements from Stimulated Recall Task

   a. Sometimes switching their seats will help, or putting them next to me.

   b. I usually position myself so I can reach to any child

   c. I was concerned about the seating of a few children so I moved a couple

3. Representative statements from Pupil Concepts of Teaching Task

I. Size, Composition of Group

1. Representative statements from Teacher Judgment Task

   a. There were 4 boys and 2 girls

2. Representative statements from Stimulated Recall Task

   a. With a large group, just a few children tend to participate so I decided to have a short sentence for each one so each one would participate

   b. There was such a variety in the group - I needed something that would interest most of them

3. Representative statements from Pupil Concepts of Teaching Task

   a. Reading - work in groups and then work alone - like working alone better

J. Pupil Outcomes

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

3. Representative statements from Pupil Concepts of Teaching Task

K. Teacher Style

1. Representative statements from Teacher Judgment Task

   a. He came on very strong - "Let me give you some problems"

2. Representative statements from Stimulated Recall Task

   a. I feign a "hard to hear response" so students will speak up. It's a technique I use

3. Representative statements from Pupil Concepts of Teaching Task

L. Other

1. Representative statements from Teacher Judgment Task

   a. That's a good approach

2. Representative statements from Stimulated Recall Task

3. Representative statements from Pupil Concepts of Teaching Task

II. Materials

A. Preparation of Materials (economy, efficiency, physical aspects)

1. Representative statements - Teacher Judgment Task

   a. The lattice on the board wasn't straight

   b. She wasted time and effort by making that big chart, then having kids draw right on it.

2. Representative statements from Stimulated Recall Task

3. Representative statements from Pupil Concepts of Teaching Task

   a. Had lattice on board to look at - crooked

B. Type of Materials

1. Representative statements - Teacher Judgment Task

   a. She had a lattice with large numbers on a tag board

   b. The teacher had an arrow she could hold

   c. There were extra visual materials

   d. He had shapes that were correlated to the answers

2. Representative statements from Stimulated Recall Task

   a. I used the "Mad Libs" because it would relate to the work we'd been doing plus give some humor

   b. I realized there was no plain paper - hadn't even planned for it. So I used scrap

   c. I was concerned about the materials I'd selected. Some children gave the appearance of being disinterested

d. The picture helped to get them started - a visual thing helps to spark them

3. Representative statements from PUpil Concepts of Teaching Task

a. Show you movies - it's easier to understand - and gives you more information

b. Helped by having numbers and dots on board

c. Numbers were on circles on a board - easier to see

d. Teacher had paper arrows

C. Teacher Use of Materials

1. Representative statements from Teacher Judgment Task

a. She wrote right on the lattice

b. He had a grid on the board and wrote the problems right next to it

2. Representative statements from Stimulated Recall Task

a. Realized the sign didn't go along with what I'd said, and decided to leave it up

b. When I read the sentence they had given me, I thought about putting it back in the box and picking another

c. I decided to rewrite the kernel sentence rather than circling words in order to prevent possible confusion

d. I hadn't been using the board too much, so I thought I would

3. Representative statements from Pupil Concepts of Teaching Task

a. Used a paper arrow - and it pointed to the answer on the "board"

b. Had lattice on board, so they could look plus figure problems out

c. Didn't write problems down on the board

d. She used an arrow (paper) so they could see what sideways meant

D. Pupil Use of Materials

1. Representative statements from Teacher Judgment Task

   a. She let them draw right on the chart

   b. Each child has one...

   c. They have pencils and papers and each child can figure it out on his own.

2. Representative statements from Stimulated Recall Task

   a. I hadn't planned on having the kids writing on the board with this lesson, but it's a good idea in general to have them involved

   b. I noticed some of them looking around for something to write on, so I gave them those books to use

   c. I had them put the pencils under the chairs because otherwise they'd be stabbing each other

   d. If I had had a blackboard, I would have had all the words visible for students to use in writing their sentences

3. Representative statements from Pupil Concepts of Teaching Task

   a. Would like to draw or play games like Monopoly

   b. Use workbooks - all together

   c. Figure out yourself, correct them together

   d. In spelling, she has you look up the words in the dictionary

E. Other

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

3. Representative statements from Pupil Concepts of Teaching Task

III. Cognitive Aspects

A. Teacher Introduction

1. Representative statements from Teacher Judgment Task

a. There's no introduction at all

b. He just started off

c. I would have given them a bit more information

2. Representative statements from Stimulated Recall Task

a. I had to get the right answer here at the beginning, or nothing would have gotten off the ground

b. I wasn't quite sure how I was going to lead him to using "adverbs" and "adjectives"

c. The opening statement was ad lib, I hadn't thought about it

d. I had dealt with this content yesterday, and I expected the students to get it right away. They didn't, so I had to review

3. Representative statements from Pupil Concepts of Teaching Task

a. Told us what we were going to do

b. Telling us what we were doing

B. Teacher Directions

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated R call Task

a. I decided to do the directions for all examples at one time. Otherwise would drag too much

b. I'd planned to give examples earlier, realized I hadn't given guidelines, so did it there

c. I told them not to turn their papers over yet, so they'd be concentrating on them all at the same time

3. Representative statements from Pupil Concepts of Teaching Task

   a. He says "come up to my desk anytime you want help"

   b. Didn't tell you how to do things; had you read the directions yourself

   c. Told us to make the sentences longer

   d. Asking them to find a number and put an arrow going up or down

C. Teacher Questioning

1. Representative statements from Teacher Judgment Task

   a. She asked leading questions

2. Representative statements from Stimulated Recall Task

   a. Sometimes you have to simplify things and give more leading questions to get the answers needed

   b. The cross-out left a partial sentence - I asked to see if they'd remembered our lesson on parts of speech

   c. I was concerned to select questions to fit this child

3. Representative statements from Pupil Concepts of Teaching Task

   a. Asking questions like, "would it still be a command?"

   b. Asked what the words in sentences were (nouns, verbs)

   c. Asked us if there was anywhere else to add new words

   d. Saying. "What else?"

D. Teacher Selection of Pupils for Discussion

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

   a. At the beginning of the lesson, I call on kids who will probably get the right answer. Thereby, kids are not distracted by wrong answer

   b. I wanted to call on Diane because she hadn't been saying anything

   c. Time and situation permitting, when they have their hands up, I try to go around and get all the answers

3. Representative statements from Pupil Concepts of Teaching Task

   a. Don't call on you when your hand is up

   b. Letting everybody have a chance

   c. Asking different people questions

   d. Called people's names (better than pointing)

E. Teacher Wait for Response

1. Representative statements from Teacher Judgment Task

   a. He acknowledged hands and waited for pupils to think

2. Representative statements from Stimulated Recall Task

   a. He volunteered, and came to the board, then couldn't remember what to say. I gave him the option of sitting down and coming back later

3. Representative statements from Pupil Concepts of Teaching Task

   a. Called on kids slowly - gave them time to think about it

   b. Waiting for them to figure out problems - giving them a chance

F. Teacher Explanation

1. Representative statements from Teacher Judgment Task

   a. He didn't show them the process

   b. She explained the value of (+ or -) the arrows

2. Representative statements from Stimulated Recall Task

   a. I was trying to communicate about the parts of the simple sentence - wanted them to realize that the simple sentence isn't very descriptive

   b. I had avoided the word "deer" when came up before, but this time I gave an explanation and said I would teach it to students later

   c. I have it established that any time I introduce a word students won't understand, they should interrupt me right then, and I'll explain

3. Reprcsentative statements from Pupil Concepts of Teaching Task

   a. She explains things several times - repeats what she said - adds to written directions

   b. Shows us how to do math problems - on board

   c. She tells us the way to do it, or gives us clues

   d. Explains if you get stuck, but doesn't do all the work for you

G. Teacher Response to Right/Wrong Answers

1. Representative statements from Teacher Judgment Task

   a. He acknowledged right answers by writing them down

   b. When an answer was wrong he initialed the problem and went on

2. Representative statements from Stimulated Recall Task

   a. Donald was confused - I was thinking that he feels self-conscious... that's why I went over and put my hand on his head

   b. When he gave his sentence, "They never planted beans," I said "What'd they plant, tomatoes?" - personalizing it a bit.

   c. That student's sentence was clumsy. I didn't like it and wished the student had thought of something else, but I definitely would accept it

   d. I said "no" because it was definitely the wrong answer and this student has had enough success in the lesson already

3. Representative statements from Pupil Concepts of Teaching Task

   a. If you miss a problem in math, the teacher gets mad at you and thinks you should know it

   b. He came back to Peter twice to see if he knew the answer to his problem

   c. When you miss a word in spelling she goes over the word with the whole class

   d. You wrote down what we said

H. Teacher Summary and Review of Lesson

1. Representative statements from Teacher Judgment Task

2: Representative statements from Stimulated Recall Task

a. I didn't want the children to lose what had been learned. Now was the time to tie it together before going on

b. I didn't have it in my plans to tie it all in

3. Representative statements from Pupil Concepts of Teaching Task

a. Talked over what we just did

I. Vocabulary (and Spelling)

1. Representative statements from Teacher Judgment Task

a. He didn't give them the vocabulary, they just pointed instead of saying right and left

b. There was no directional terminology

2. Representative statements from Stimulated Recall Task

a. Stacie wanted me to spell "fast" and I refused. I don't spell if it's phonetical

b. I decided to tell them that it was a "verb"

c. I used the word "sentence expansion" - that's a correct description of what they did, but they don't know what "sentence expansion " means.

d. I try to use non-sexist vocabulary

3. Representative statements from Pupil Concepts of Teaching Task

a. Said "1, straight up" and things like that

b. Talked a lot - "90 going down"

c. Said "30 down" - made it easier - (other teacher just wrote it down)

d. "Put your hand on 30, make an arrow pointing up "

J. Content Focus

1. Representative statements from Teacher Judgment Task

   a. She worked on up arrows and adding

   b. She emphasized more and less, and adding or subtracting 10 and 1

   c. That was a high level lesson dealing with shapes on the lattice

2. Representative statements from Stimulated Recall Task

   a. Wanted them to see you could add lots of description to a noun, but not to a pronoun

   b. I'm not as concerned with grammar here as with sentence expansion

   c. I wanted to focus just on what pupils saw in picture - I didn't want to get off track

   d. I didn't want to get into verbs and tenses so when I drew the card with 2 forms of a verb, I folded the card so children could only see one tense

3. Representative statements from Pupil Concepts of Teaching Task

   a. Teaches us our vowels - short, long, exceptions

   b. Food - what foods are good for you

   c. Learn about dinosaurs and penguins

   d. Didn't do diagonals - might be too hard

K. Data (Selection, Organization, Amount)

1. Representative statements from Teacher Judgment Task

   a. He had so many arrows up and down

   b. He gave too many examples before explaining why

   c. He used mostly up and down arrows, not many sideways or diagonals arrows

   d. He set up a pattern (of problems) then switched the pattern-no rote learning

2. Representative statements from Stimulated Recall Task

   a. I'd originally planned to put a completed sentence on the overhead-changed my mind while they were working, thought they'd get more out of using their own sentences

   b. I wanted to get as many adjectives as possible to open up the sentence

   c. I had to write down parts of speech; the kids were not responding

   d. I was thinking maybe I'd used the wrong sentence. Maybe if I'd put "The ___ man swam____," they'd have seen the adverb at the end

3. Representative statements from Pupil Concepts of Teaching Task

   a. You put the expanded sentences in groups

   b. You made two columns (of sentences)

   c. He picked easy problems so the kids wouldn't make mistakes and make him look bad (on television)

   d. He switched the problems from ↑ ↓ to // so they could learn to do it both ways

L. Pacing/Time

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

   a. I was wondering if we were spending too much time on this part

   b. I decided not to do that because of the time involved in putting it on the board

   c. Felt like I was losing control of the group - wanted to move on to next activity

   d. I decided there was not time to deal with run on sentences. I introduced the idea but would not go on

3. Representative statements from Pupil Concepts of Teaching Task

   a. He wrote down the problems fast

M. Pupil Ability

1. Representative statements from Teacher Judgment Task

   a. Learning is hard for those pupils

   b. The pupils were articulate in explaining differences

2. Representative statements from Stimulated Recall Task

   a. Hannah has difficulty with language

   b. One thing interesting about Richard - he can read any word he hasn't seen before, but he can't read a book

3. Representative statements from Pupil Concepts of Teaching Task

N. Pupil Background, Preparation, Needs

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

   a. The children had been having difficulty in writing stories, because they think a sentence has to fit on one line

   b. We've been drilling on nouns, so every time I can emphasize it daily, I do

3. Representative statements from Pupil Concepts of Teaching Task

O. Pupil Ideas

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

   a. I let them change the form of the verb - I thought it was original on their part

   b. He gave the sentence, "Sally acted stupid." I let it go and tried to let them be as creative as they wanted to, as long as they got the point

   c. I realized I could use Ralph's description of "describe," which he had given earlier

d. They all used my two words as the start for the sentence, and were not adding any words in between

3. Representative statements from Pupil Concepts of Teaching Task

P. Pupil Learning

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

a. I thought they had the idea of expanding by this point

b. I felt good. What I wanted to cover, they were really doing it

c. I saw the children were having trouble with the story character

3. Representative statements from Pupil Concepts of Teaching Task

a. Kids knew how to do it now

b. He got it right

Q. Other

1. Representative statements from Teacher Judgment Task

a. There's not much interaction between teacher and pupils

2. Representative statements from Stimulated Recall Task

3. Representative statements from Pupil Concepts of Teaching Task

a. In math, have charts to keep for yourself on how well you did on each page

b. To get ready for spelling test she had us write the words a number of times, then take them hone and study them

c. Make books to take home - write your own stories

d. She says words over if you forget them

IV. Affective Aspects

A. Teacher Enthusiasm

1. Representative statements from Teacher Judgment Task

a. He didn't smile; he seemed bored

b. She was enthusiastic

2. Representative statements from Stimulated Recall Task

3. Representative statements from Pupil Concepts of Teaching Task

a. Laughing, smiling

B. Teacher Attitude Toward Pupils

1. Representative statements from Teacher Judgment Task

a. She was very judgmental; she corrected everything

b. He was very accepting

2. Representative statements from Stimulated Recall Task

a. I know from experience that if I give a smile, it makes rejection easier

3. Representative statements from Pupil Concepts of Teaching Task

a. Sometimes they see the whole thing or listen to the whole story, then they're helpful

C. Teacher Use of Positive Reinforcement

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

a. I thought they needed some kind of a reward, to culminate it

b. I said to Tony, "Great idea - try again." He was stumbling and ready to quit, but through positive reinforcement I got him to keep thinking

1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

c. I try to respond to almost every comment from students - I want students to know I'm still hearing them

d. Delynne hurt Kari's feelings, and I had to let her know that I thought what she was doing was fine

3. Representative statements from Pupil Concepts of Teaching Task

a. When you finish your work, you get a surprise - next day - peanuts, candy

b. Saying, "Good for you"

c. Said "Good boy"

D. Teacher Language

1. Representative statements from Teacher Judgment Task

a. She called it "Frank's favorite number" -- That's great.

2. Representative statements from Stimulated Recall Task

a. It seemed like he was over there. I said "If you don't want to learn that's one thing, but I'm here to help the others."

3. Representative statements from Pupil Concepts of Teaching Task

E. Pupil Participation/Attention

1. Representative statements from Teacher Judgment Task

a. The children participated

b. Two children were not involved by the teacher

c. The children seemed reluctant to participate

d. Children were responsive

2. Representative statements from Stimulated Recall Task

a. They were so enthused. If I had put up the chart, their attention would have been on that, so I waited till I was ready for that part of the lesson

b. If I don't get to him, will lose him and the rest of group

c. Alec seemed a bit out of it - I wanted to bring him into the group

3. Representative statements from Pupil Concepts of Teaching Task

   a. Same 2 or 3 people answering the questions - (6 kids in group)

   b. Kids weren't looking at board

F. Pupil Behavior

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

   a. I wasn't sure whether he was really thinking in those terms, or just acting cute, as he's prone to do

   b. You see - he moves his seat, a kid copies, she's right there to tattle - a lot of interaction like that with this class

   c. Marti was fussing around, so I decided to use his sentence to bring him back into group

   d. Several children were giving signs of being disinterested

3. Representative statements from Pupil Concepts of Teaching Task

   a. Kids raised hands instead of shouting out

G. Pupil Feelings

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

   a. I had decided not to push her. If she wanted to stay, okay. You can't push this student or she will clam up

   b. I want Ralph to feel as important as other students

   c. I didn't want to make a big point of it - it would just make her feel bad

   d. I really watch it with this group - they're easily discouraged

3. Representative statements from Pupil Concepts of Teaching Task

H. Teacher Image

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

a. I like sitting on the edge of the table - it gives a fairly casual posture

b. I allow myself to be told by children I'm wrong, and I admit it

c. The camera made me self-conscious in my movements

2 3. Representative statements from Pupil Concepts of Teaching Task

I. Other

1. Representative statements from Teacher Judgment Task

a. The teacher is embarrassed in this lesson; he's not acting natural

2. Representative statements from Stimulated Recall Task

3. Representative statements from Pupil Concepts of Teaching Task

a. Get hurt - someone walks us to the office

b. Office - let sisters go home to fix lunch for mother

V. Physical Aspects

A. Pupil Comfort

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

a. That child was not feeling well today. He complained of it at noon

3. Representative statements from Pupil Concepts of Teaching Task

B. Teacher/Pupil Movement

1. Representative statements from Teacher Judgment Task

   a. She had the pupils come right up and participate

2. Representative statements from Stimulated Recall Task

   a. Hadn't planned to have kids go to the board, but they wanted to

   b. I usually move around, checking more, but I was concerned about the time

   c. I decided to have children bring the word strips to the board so they would have some activity

   d. Rather than just having them sit there, I want to get them involved - turn them into actors, physically to act out the sentence

3. Representative statements from Pupil Concepts of Teaching Task

   a. Walking across floor

C. Teacher/Pupil Proximity

1. Representative statements from Teacher Judgment Task

   a. The teacher's at eye level with the kids

   b. The children are too far away

2. Representative statements from Stimulated Recall Task

3. Representative statements from Pupil Concepts of Teaching Task

D. Visual/Auditory

1. Representative statements from Teacher Judgment Task

   a. He has the lattice and problems on the board, visible to the kids; there's one focal point

   b. Children are close to the board for clear vision

2. Representative statements from Stimulated Recall Task

   a. I kind of like a stool - it's up higher - I can see them easier, and they can see me

   b. I changed the volume of my voice, because we were working

3. Representative statements from Pupil Concepts of Teaching Task

   a. Talking - numbers [saying numbers as well as writing them on board]

E. Classroom as a Whole

1. Representative statements from Teacher Judgment Task

   a. that classroom is just too neatsy-cutesy

2. Representative statements from Stimulated Recall Task

3. Representative statements from Pupil Concepts of Teaching Task

   a. Tables and chairs - they're in a classroom

F. Nonverbal Communication

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

   a. I could tell by the looks on their faces - the blankness - they weren't quite sure

   b. I use my hands a lot to describe

3. Representative statements from Pupil Concepts of Teaching Task

G. Other

1. Representative statements from Teacher Judgment Task

2. Representative statements from Stimulated Recall Task

3. Representative statements from Pupil Concepts of Teaching Task

   a. Flags on their pencils - probably with names on so they don't get lost or ripped off

b. No outside noise - no recess

c. Playing with beads

d. Wrote 1 and 2

Part II.

Division of Basic Categories
for Pupil/Process Comparison

Division of Basic Categories for Pupil/Process Comparison

Pupil

General Approach

Pupil Activity

Materials

- Pupil use of materials

Cognitive

- Pupil ability
- Pupil background, preparation, needs
- Pupil ideas
- Pupil learning

Affective

- Pupil participation
- Pupil behavior
- Pupil feelings

Process

General Approach

Sequence of Procedures

Materials

- Teacher Use of materials

Cognitive

- Teacher introduction
- Teacher directions
- Teacher questioning
- Teacher selection of pupils for discussion
- Teacher wait for response
- Teacher explanation
- Teacher response to right/wrong answers
- Teacher summary and review
- Data
- Pacing/time

Affective

- Teacher enthusiasm
- Teacher attitude toward pupils
- Teacher use of positive reinforcement

Part III.

Task - Specific Categories

Teacher Sort Task

Directions to Coders

Code Sheet

A. For each sort, record under the appropriate Standard Group and indicate:

1. The order of the sort - 1st, 2nd, etc. If two different sorts fall into the same standard category, divide space up or use appended sheet.
2. The teacher's description of this sort, in the teacher's own words.
3. Code for Column A (overall description) choose the appropriate one of the following 4 possibilities and write the number in the space.
   a. Teacher assigned an overall description without probing.
   b. Interviewer questioned teacher and description was then assigned.
   c. Interviewer questioned teacher, but no description was assigned.
   d. Teacher didn't volunteer a sort description and was not asked by interviewer.
4. Code for column B (situational vs. general observations) choose the appropriate one of the following three possibilities and write the number in the space.
   a. Sort was related to observations specific in the situation.
   b. Sort was related to general observations or information known prior to this lesson.
   c. Sort contained both situational and general observations.

5. Code for column C, (simple vs complex bases).
   a. Simple sort (one clear basis for grouping pupils).
   b. Complex sort (more than one basis for grouping pupils).
6. Code for Column D - (consistency)
   a. High - basis for grouping is consistent across groupings.
   b. Middle - some consistency present between groupings.
   c. Low - basis for grouping very muddled, inconsistent from group to group.
7. Groupings - indicate the number of groups and the number of children within each group in the sort - for example, (four groups) 1,2,7,2.
8. For each Unique Group, record in the blank spaces at bottom of page, as follows:
   a. Write your description of the basis for this sort in first space
   2-7 - same directions as above for "standard groups".
9. For Clusters, write names of children who stay together over more than one sort and number of times repeated.

   Example: John, Mary, Sue 3 times
   Joe, Cathy 4 times

10. Unusual Behavior Codes (are there any children who acted differently today?)
    a. Write the names of children mentioned for each category. If a child's "unusual behavior" falls into more than one space, code under "other" and specify.

11. Names of Children Discussed Individually

As you listen to the tapes of teacher comments on the sorting task, record the names of pupils about whom teachers make specific comments, differentiating them in some way from the rest of the group with whom they are placed.

Teacher Sort Task

Code Sheet

Teacher_____ Grade_____ Subject_____ Order Taught_____

Number of Children Present_____

Standard Groups	Sort Order	Teacher Description	Codes A	B	C	D	Groupings
Reading Achievement/ Ability							
Math Achievement/ Ability							
General Achievement/ Ability							
Behavior							
Socialization							
Attention							
Participation/ Response							
Comprehension							
Unique Groups:							

Code Sheet (Cont'd)

Clusters		Unusual Behavior Codes	Number of Children
Names of Children	No. of Times Repeated	Involvement	
		Behavior	
		Understanding	
		Distracted by Taping	
		Health	
		Other(Specify)	

Names of children discussed individually:

Teacher Sort Task: Summary Sheet

Teacher _____ Grade _____ Interviewer _____

	Language 1	Language 2	Math 1	Math 2
1. No. of children present				
2. No. of sorts				
3. First sort made				
4. No. of standard sorts, No. of unique sorts				
5. No. of simple sorts, No. of complex sorts (Code C)				
6. No. groups where single child				
7. No. groups where child. paired				
8. No. times single child compared to rest of group				
9. Description - (Code A)	1 2 3 4		1 2 3 4	
10. Situational - (Code B)	1 2 3		1 2 3	
11. Coherency - (Code D)	1 2 3		1 2 3	
12. No. Children for whom specific information provided				
13. No. Children acting differently				
14. No. Sorts in standard categories:				
Reading Achievement/Ability				
Math Achievement/Ability				
General Achivement/Ability				
Behavior				
Socialization				
Attention				
Participation/Response				
Comprehension				

Stimulated Recall Task

Task - Specific Categories

Decision Type

Interchange - instantaneous verbal interaction

- accept pupil comment
- reject pupil comment
- give information to pupil
- seek information from pupil
- call on new pupil

Planned - decision directly related to original lesson plan and dealing with an activity that will last several minutes.

- do it now - begin activity at this time
- skip or drop - eliminate activity
- reorder - rearrange planned sequence of activities
- refine - revise or enlarge on details of procedures for activity
- stet. - thought of changing activity but didn't

Unplanned - decisions related to activities not originally included in lesson plan, that will last several minutes.

- pupil source - idea for activity originates with pupil
- teacher source - idea for activity originates with teacher

Considerations Noted - what teacher hopes to achieve or avoid by selecting a particular action.

Information Used - data the teacher observes or has in mind that he/she considers pertinent to the decision.

Alternative Considered - comments about other moves or action that teacher might have taken.

* = Interviewer Probed on this point - note all points at which you ask probing questions.

Int. = Interviewer initiated discussion (stopped tape) - note whether this was at a transition, or at a teacher response to a pupil error, or at some other event in the classroom interaction.

A-36

TEACHER JUDGMENT TASK

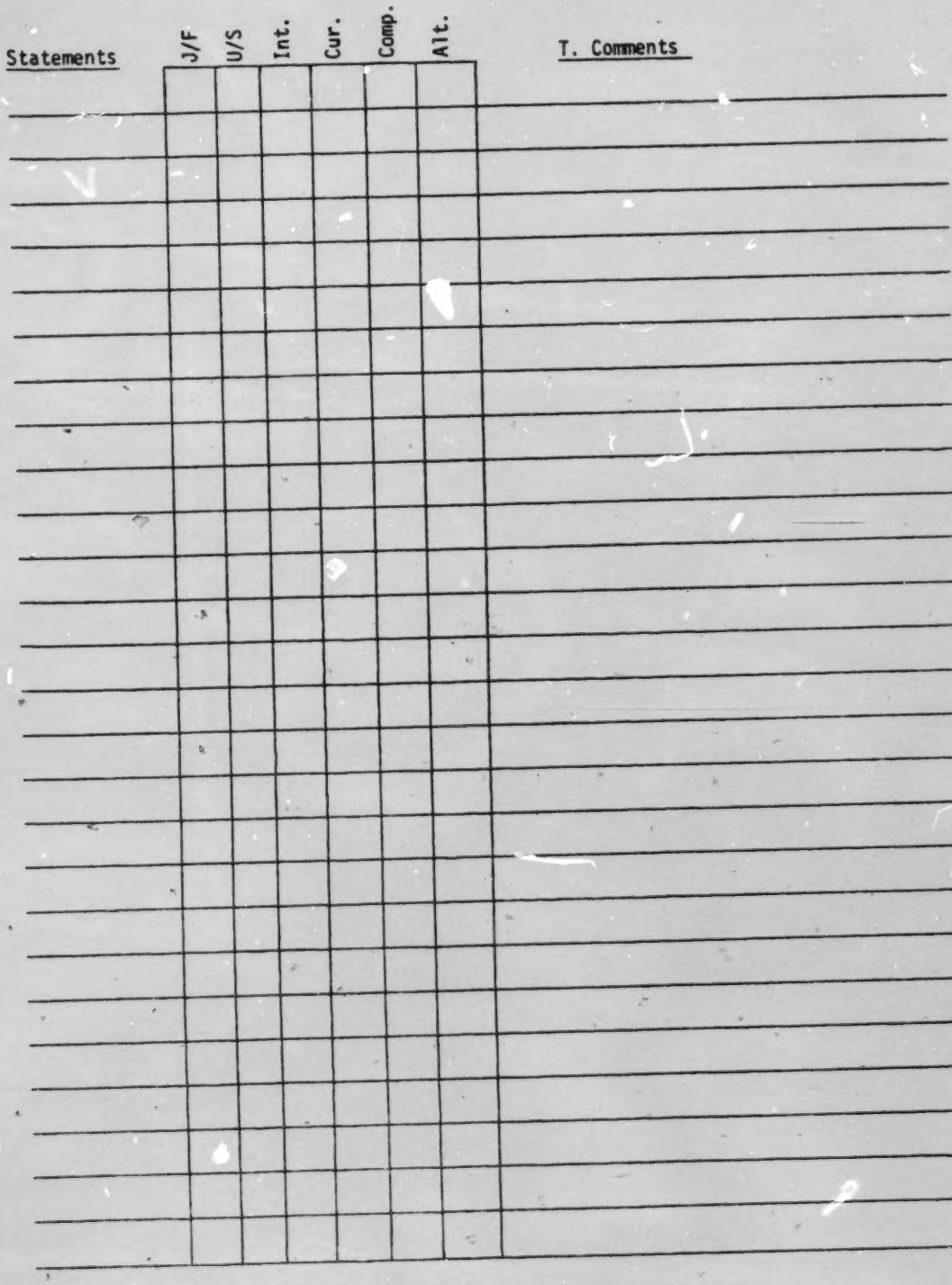
Summary Sheet

Teacher _____ Grade _____

Interview # 1 2

	Lessons I	II	III	IV	V	Totals	
Categories Mentioned							
General Approach							Generalizations
Materials							
Cognitive							
Affective							Withholding Judgment (O+S+I+R)/Total
Physical							
Totals							
J/F +							
0							
-							Pupil/Process
U/S C							
S							
I							
Int. Ø							
M							
?							Cognitive/Affective
Cur. Q							
N							
U							Category Focus
Comp. E							
T							
Alt. A							
R							Additional Comments
Preferences							
Response to Pupil Errors							
Pupil Feelings							

Teacher Judgment Task: Coding Sheet



Teacher Judgment Task

Task-Specific Categories

Judgmental/Factual

+ - judged appropriate

- - judged inappropriate

0 - neutral or factual observation

"Interference"

Ø - inaccurate observation

M - unusual interpretation

? - uncertainty

Makes Comparisons

E - compares to own teaching situation

T - compares to other taped teachers

Universal/Situational

C - categorical rule proclaimed

S - appropriateness is situational

I - indicates doesn't have all necessary information to verify or make judgment

Curiosity

Q - wants to know more about a procedure

N - notes it's a new idea

U - unexpectedness - shows surprise at an event

Considers Alternatives

A - proposes alternative procedure

R - revises earlier judgment

Generalizations About Teachers - makes statement (without probing) that synthesizes observations, noting similarities and differences among the group of teachers on videotape, or noting similarities and differences among teachers in general.

Witholding Judgment - a score obtained by summing the neutral or factual observations (0), the comments indicating that appropriateness is situational (S), the indications that information is lacking (I), and the instances of revising an earlier judgment (R).

Stimulated Recall Task

Summary Sheet

Teacher Name_____ Grade_____

Interview #: 1 2

Number and Types of Decisions Identified

Interchange -

accept _____

reject _____

give _____

seek _____

new pupil_____

Planned -

do it now _____

skip or drop _____

reorder _____

refine _____

stet. _____

Unplanned -

pupil source _____

teacher source _____

Categories Mentioned

Decision	C	I	A	Total
General Approach				
Materials				
Cognitive				
Affective				
Physical				
Total				

Pupil/Process

Cognitive/Affective

Content Focus

Decision

Concern

Information

Additional Comments

Coding Sheet

Stimulated Recall Task

Teacher Name_____

Tally of Parenthetical Comments:

Coding	Teacher Comments
Decision Type -	
Decision Substance -	
C -	
I -	
A -	
Decision Type -	
Decision Substance -	
C -	
I -	
A -	
Decision Type -	
Decision Substance -	
C -	
I -	
A -	
Decision Type -	
Decision Substance -	
C -	
I -	
A -	

APPENDIX B

FORMS

Part I.

Teacher Orientation Forms

Schedule

Special Studies on Teacher Perceptions and Teacher Planning

The following information is provided to give a quick summary of the different projects we will be working with over the next three months.. Please feel free to ask questions whenever they occur to you.

Dates	Activities with Teachers
February 24-28	Far West Laboratory staff will meet with all teachers participating in the Special Studies to outline and discuss planned work.
March 3-21 Specific schedules will be arranged with individual teachers.	All teachers will teach two 20 minute lessons with 12 students from their regular classroom and then participate in an hour interview/ discussion with a Laboratory staff member. One of the lessons will be videotaped; one will be audiotaped. Things to remember: 1. The two lessons will be taught in two different weeks. 2. Before teaching each lesson, please prepare a written lesson plan following whatever format is normal for you. Then either audiotape or write answers to a few short questions regarding the planning you have done (approximately 10 minutes). The audiotape will be collected at the end of the second lesson, but if you prepared written answers instead, please give them to the Laboratory staff member interviewing you, along with your written lesson plan, at the end of your lesson. 3. The actual taping of the lesson will take approximately 20 minutes. A person familiar with videotape equipment will come to set up the equipment in your classroom 15 minutes prior to the start of the lesson, but this need not disturb your regular classroom routine. They will also need 10 minutes to dismantle the equipment following completion of the lesson. 4. A substitute will be hired to cover your class for the two half days you will be involved in this activity. 5. During the interviews, which will last approximately an hour, you will be asked to look at tapes of other teachers teaching a similar lesson and at tapes of your own lesson. We will be asking you to talk about your observation and reactions. 6. All teachers will teach one math and one language lesson using the content materials provided. Each teacher will plan the lesson to suit their own pupils and classroom situation.

	Activities with Classroom Students
April 17-18	We will be asking you to spend up to three hours on a simulation task, planning for a reading program at the start of the year with a new group of students. We will provide you with information about 14 new pupils, from a "data bank" that contains a variety of types of information. You can use this information to "get to know" your new pupils. After you prepare a brief description of your planned program and "thumb-nail sketches" of your students from materials provided, we will be asking you to respond to a few questions. Then we will show you a short tape of several children and have you describe their reading problems and talk about how you might proceed to work with them.
March 3-21	All students who worked with their teachers in the 20 minute lessons will be asked to rate a number of statements on a three-point scale: Yes, "?", and No. The items will consist of simple sentences like: I am good at reading; I like to read stories in school. A Laboratory staff member will administer the scale and read the items aloud to the students, following each lesson. This will take about ten minutes, and will provide you with a coffee break prior to the follow-up interview.
April 7-18	A small number of pupils from the Bay Area will be brought together in groups of four to the Laboratory to work with us in identifying the types of things pupils observe during lessons. This activity will take approximately half a day for each group of pupils.

For further information call collect to:

Lisa Hunter - (415) 565-3002 Office
" 658-1391 Home

Greta Morine " 565-3009 Office
" 793-4934 Home

Interviewers will be:

Faye Mueller
Diane McIntyre
Beau Vallance
Greta Morine

Far West Laboratory for Educational Research and Development
1855 Folsom Street
San Francisco, California 94103

FAR WEST LABORATORY FOR EDUCATIONAL
RESEARCH AND DEVELOPMENT
1855 FOLSOM ST., SAN FRANCISCO, CALIFORNIA 94103

Instructions to Participating Teachers

You will be teaching this lesson in reading and a lesson in mathematics to a group of twelve of your pupils, who represent a cross-section of achievement levels. Each lesson should be about twenty minutes long, the reading lesson will be videotaped, and the math lesson audiotaped.

We are trying to learn what teachers think about in planning or preparing lessons. As you get ready to teach this lesson, please make readable notes about what you expect to do in the lesson -- notes that would help an observer to understand your lesson more completely. These notes will be collected right after you have taught the second lesson.

After you have completed your planning notes, please turn to the colored sheet included with this packet of materials which contains six questions designed to help you elaborate on the notes you have made. Since written notes are often very sketchy, we have included these questions to give you a chance to comment on your notes in more detail.

The questions may be treated in either of two ways. They were written primarily as a guide to an audiotape "discussion" of your notes, and if you feel comfortable using a tape recorder, you are encouraged to answer the questions as completely as you can on tape. But if you prefer to give written responses instead, please answer the questions on a separate sheet of paper. Do what feels most comfortable to you. If you choose to tape record your answers, keep the tape until after you have planned and taught the second lesson and we will collect it then. If you write out your answers to the questions, please turn these in with the planning notes at the end of each lesson.

All teachers will be teaching the same general content, one lesson in reading and one in math. Attached are some materials which give information about the content of each lesson. The materials describe the general subject-matter of the lesson, they give some practice examples of the kinds of things that might be taught, and they suggest some objectives you might want to use. We emphasize, however, that you may use the materials any way you like and plan the lessons to suit your own pupils and your own teaching style. The materials can be used in many different ways and we encourage you to use them in a way that is most comfortable to you.

TELEPHONE (415) 565-3000

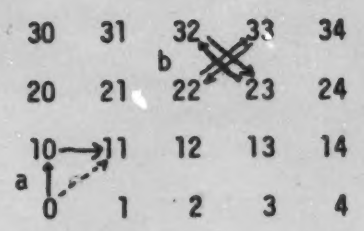
Instructions to Teachers:
Using the Lattice (Mathematical Operations)

In this lesson you will be working with a simple mathematical system known as a lattice. The lattice consists of an arrangement of whole numbers in a way that can be used to perform (and demonstrate) many different kinds of mathematical operations. A lattice of the numbers 0-99, arranged in tens, is shown below.

90	91	92	93	94	95	96	97	98	99
80	81	82	83	84	85	86	87	88	89
70	71	72	73	74	75	76	77	78	79
60	61	62	63	64	65	66	67	68	69
50	51	52	53	54	55	56	57	58	59
40	41	42	43	44	45	46	47	48	49
30	31	32	33	34	35	36	37	38	39
20	21	22	23	24	25	26	27	28	29
10	11	12	13	14	15	16	17	18	19
0	1	2	3	4	5	6	7	8	9

The lattice may include more or fewer numbers than the one shown here, and can be arranged in fives or in other groups as well. Generally we have found the tens grouping to be the clearest and easiest to use, particularly for teachers and pupils not familiar with it. An array of 0-49 seems to be the smallest-sized lattice that still allows enough leeway for experimenting with very different kinds of problems.

The lattice is used to demonstrate the relationships between numbers and the operations performed on them by using arrows which trace a path of moves from one number to another. Thus, in the partial lattice below



the solid arrows in group a show the move from 0 to 10 and from there to 11. The dotted arrow shows the move directly from 0 to 11. An unlimited number of arrows can connect numbers in more and less complicated paths. The important characteristics of the arrows are that a sideways move (right or left one space) produces a change of plus or minus 1, and a vertical move (up or down) produces a change of plus or minus 10. Diagonal arrows (in any of four directions: see group b in the small lattice above) produce a change of plus or minus 11 (10 ↗ = 21; 21 ↙ = 10) or plus or minus 9 (10 ↘ = ?; 1 ↖ = 10). Opposite arrows "cancel" each other (10 ↑↓ = 10).

Lattice "problems" are a standard way of explaining how the lattice works, by allowing pupils to work through the operations. There are several kinds of lattice problems. The basic four are illustrated below.

1. One-arrow problems:
   14 → = (15)
   20 ↓ = (10)
   3 ↗ = (14)

2. Two-arrow problems:
   3 → → = (5)
   3 ↑ → = (14)
   16 →← = (16)

3. Many-arrow problems:
   3 ↑↑↗↘ → → = (27)
   19 ← ← ↑ → → = (29)
   31 ↑ → ↓↑ → ↓ → (34)

4. "Missing-arrow" problems:
   a) 15 = 26
   b) 46 = 15
   c) 6 = 8

Some possible answers (there are many) to #4:

a) 15 ↗ = 26; 15 ↑ → = 26; 15 ↑↑↘ = 26
b) 46 ↙↓↓ = 15; 46 ↓ ← ↓↓ = 15; 46 ↓↓↓ ← = 15
c) 6 → → = 8; 6 ↗ ↘ = 8; 6 ↑ → → ↓ = 8

These basic problem formats allow for a wide range of mathematical principles and operations to be demonstrated and discovered. Possible objectives of a first lesson on the lattice might include:

1. Pupils will learn to solve one-arrow (two-arrow) problems.
2. Pupils will discover all eight of the one-arrow operations.
3. Pupils will learn that 14 → ↑ = 14↗ (transitivity).
4. Pupils will learn that opposite arrows cancel each other: 41 →← = 41.
5. Pupils will learn that there are many (an infinite number of) ways to get from one number to another.

More complex principles can also be used as the basis of lesson objectives, depending on the teacher's familiarity with the lattice and on children's success with simpler operations on it. These include:

6. Multiple cancelling
   a. the principle that a series of alternating arrows cancel each other when there are an even number of them (3 ↑↓↑↓↑↓ = 3) but do not cancel (and do move one step) when there is an odd number of arrows (3↑↓↑↓↑↓↑ = 13).
   b. the principle that the opposing arrows need not be sequenced in pairs in order to cancel each other. (for example, 32 ↑ →← ↓ = 32).
7. The system of the lattice (being able to project to points above the top line of numbers and identify what those numbers would be).
8. Identification of numerical meaning of the arrows:
   → = +1; ← = -1; ↑ = +10; ↓ = - 10; ↗ = + 11; ↙ = -11; ↖ = +9; ↘ = -9.

You may want to practice making up problems with the lattice and familiarize yourself with the operations that the various arrow patterns describe before trying to teach a lesson. The lattice is not complicated and should be fairly easy to use. Your task in this lesson is to teach your pupils something about the lattice -- we are interested in how different teachers use this material in teaching, so what you teach and how you organize

the lesson are completely up to you. Feel free to experiment.

Do not feel that you must try to teach higher-order principles, or that you must teach as much as possible about the lattice. You may want to do so if you feel your pupils can handle it (and you may decide in the middle of the lesson to go further than you had planned), but different approaches to the lattice are appropriate for different grades and ability levels. Use your judgment -- of your pupils' background and of your understanding of the lattice -- in deciding what and how to teach.

Instructions to Teachers:
Reading Comprehension

In this lesson you will be teaching one aspect of reading comprehension, the skills of understanding and constructing expanded sentences. How you teach the principle of expanded sentences is left to your judgment. There is no single preferred approach, and we are interested mainly in seeing how different teachers approach the problem. In the paragraphs below we will describe what is meant by "expanded sentences," suggest some possible objectives for a lesson, and give some examples of how this principle can be communicated to children.

An expanded sentence is one where the meaning of simple subject-verb construction (or of the related interogative) has been changed by adding any one of a number of types of modifiers. Expansions can be made on any sentence, though the simplest illustrations begin with basic noun-verb constructions. The expansions of a sentence can be either further expanded or gradually deleted in order to demonstrate their effe For example, the sentence "She climbed the tree" may be expanded to "She climbed the big apple tree" or contracted to "She climbed." Both modifications illustrate the effect of expansion.

The expanded-sentences material is drawn from work in the area of structural linguistics, which focuses on "transformation" of sentences, and the ways in which changes in sentence structure affect changes in meaning. We have chosen this material for this teaching session because it is somewhat atypical of the subject-matter covered in the regular curriculum. The principles which can be taught using expanded sentences are useful and helpful to elementary pupils, but the pupils are not responsible for this material in their regular program. You should feel free to use any material and examples that you wish.

Some rules of sentence expansion which may emerge in the course of

a lesson include:

1. Adding words to a sentence is one way to change the meaning of a sentence (or, adding more information changes the meaning of a sentence).

2. All sentences can be expanded; no sentence is too long to expand.

3. You can expand (change the meaning of) a sentence by describing each thing in more detail (use of adjectives and adverbs).

4. You can expand (change the meaning of) a sentence by talking about more kinds of actions (additions of verbs).

5. You can expand (change the meaning of) a sentence by saying <u>when</u> (or <u>where</u>) something happened.

6. You can expand (change the meaning of) a sentence by saying <u>what</u> (addition of direct or indirect objects).

You may want to select one or more of the above sample rules to serve as objectives for the lesson. Or you may want to think up some of your own, or combine them somehow. Other kinds of objectives, not referring specifically to rules that pupils would identify, might be that:

7. Pupils can identify the expanded sentences from a list of basic and expanded sentences.

8. Given a set of simple sentences, pupils can expand them in at least one (or two, or three) way(s).

9. Given an expanded sentence, pupils can remove the appropriate word(s) to produce a simple sentence from it.

Different objectives may be appropriate to different groups of pupils depending on grade level and general ability. You should select objectives that you feel comfortable with for your class, and arrange the lesson appropriately.

Some examples of expanded sentences which you might want to use are given below. You may use these and/or others that you may think up; the only real restriction on use is that the vocabulary be appropriate to the

grade level of your pupils.

Examples:

a. The snow covers the streets.
The dirty snow covers the streets.
The dirty snow covers the cold dark streets.

b. The birds fly.
The green birds fly.
The big mean green birds fly south today.

c. Shut the door.
Shut the big barn door.
Don't shut the big dirty red barn door.

d. The robin sang.
The red robin sang.
The red robin sang happily yesterday.

e. Her father made a cake.
Her smart father made a giant cake.

f. That turkey ate the candy!
That fat turkey ate the Christmas candy!

g. The monkey ate.
The monkey ate a sandwich.
The big hairy monkey ate a turkey sandwich very fast.

h. The children ran to school.
The small children ran and skipped to school.

i. They planted beans.
They planted green beans.
They happily planted green beans every morning for a week.

j. Danny cooked.
Danny cooked dinner last night.
Danny cooked a big delicious turkey dinner here last night.

These sample sentence expansions suggest the kinds of changes that can be made using the sentence expansion rules. Others should be easy to think up; you might want to ask the pupils to suggest other simple or expanded sentences to work on.

Far West Laboratory
BTES - Study "C"
Teacher Planning

Interview Questionnaire -- Planning for Lessons

(Do not read until after you have written your planning notes).

The questions below are designed to help you be more detailed than you might be in brief written notes. Feel free to be as informal and conversational in your answers as you like.

After you have made written notes on your plans for teaching this lesson, please read the following questions and answer them as clearly and as comfortably as you can, using the audiotape recorder.

1. Go through your written notes and try to amplify a bit on each item -- talk about why it seems important, how often (or rarely) you refer to that kind of thing in normal planning, what it helps you to remember, or anything else that would help us understand what you have written.

2. What steps did you leave out, in writing these notes? That is, what were you thinking between items 1 and 2 (for example) and in getting from each step to the next?

3. Is the planning you did for this lesson similar to the kind of planning you actually do in normal teaching? How is it different?

   - Do you write out lesson plans, or do you usually plan in your head only?

   - Do you plan specifically for each lesson, or do you usually make a general plan for a longer period of a week, a "unit", or a term, for example?

4. If you were responsible for a student teacher (and perhaps you are already), how would you advise him or her to prepare for lessons?

5. Are there some teaching situations where you plan more carefully (or in more detail) than others? What are these? Why?

6. Are there some teaching situations where you feel you need more information for planning and preparation purposes, than others? What are these? How are they different?

Part II.

PUPIL SELF-PERCEPTION FORMS

PUPIL SURVEY (MATH)

NAME_____

SCHOOL_____

TEACHER_____

DATE_____

Sample Questions:

Ice cream is good at any time of year.	YES	?	NO
I get sick when I have to clean my room.	YES	?	NO
_____	YES	?	NO

1.	In this lesson I wiggled around a lot.	YES	?	NO
2.	I am good at math.	YES	?	NO
3.	In this lesson I talked to my neighbors a lot.	YES	?	NO
4.	Math is the hardest thing I have to do.	YES	?	NO
5.	I was really listening all the time in this lesson.	YES	?	NO
6.	I get nervous when the teacher asks me to do a math problem on the blackboard.	YES	?	NO
7.	I raised my hand a lot in this lesson.	YES	?	NO
8.	I like to be the one to give the answer to a math problem.	YES	?	NO
9.	I answered a lot of questions in this lesson.	YES	?	NO

10. How well do you think you did in the math lesson you just had? Put an "X" in front of the answer that tells how much you think you learned. Mark only <u>one</u> line.

_____ I could do all the problems right.

_____ I could do most of the problems right.

_____ I could do half of the problems right.

_____ I did most of the problems wrong.

_____ I did all of the problems wrong.

PUPIL SURVEY (READING)

NAME _____

SCHOOL _____

TEACHER _____

DATE _____

Sample Questions:

Ice cream is good at any time of year.	YES	?	NO
I get sick when I have to clean my room.	YES	?	NO
_____	YES	?	NO

1. In this lesson I wiggled around a lot.	YES	?	NO
2. I am a good reader.	YES	?	NO
3. In this lesson I talked to my neighbor a lot.			
4. Reading is the hardest thing I have to do.	YES	?	NO
5. I was really listening all the time in this lesson.	YES	?	NO
6. I get nervous when the teacher asks me to read out loud.	YES	?	NO
7. I raised my hand a lot in this lesson.	YES	?	NO
8. I often volunteer to read aloud in school.	YES	?	NO
9. I answered a lot of questions in this lesson.	YES	?	NO

10. How well do you think you did in the language lesson you just had? Put an "X" in front of the answer that tells how much you were able to do. Mark only <u>one</u> line.

_____ I could answer all the questions.

_____ I could answer most of the questions.

_____ I could answer half of the questions.

_____ I could answer a few of the questions.

_____ I could not answer any of the questions.

Part III.

Teacher Interview Schedules

DAY A PAGE 1 of 7

(Studies B and C)

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
LATTICE LESSON VIDEOTAPE 20 Minutes teaching time 30 Minutes total time Videotape equipment Bring 3 x 5 cards.	1. *Teachers given 4-page instruction sheet. Plan lesson suitable to their students. No pre-set lesson plan.* 2. *Instructions as follows:* You will be teaching this lesson in mathematics to a group of twelve of your pupils, who represent a cross-section of achievement levels. The lesson should be about twenty minutes long, and will be videotaped. We are trying to learn what teachers think about in planning or preparing lessons. As you get ready to teach this lesson, please make readable notes about what you expect to do in the lesson -- notes that would help an observer to understand your lesson more completely. These notes will be collected right after you have taught the lesson. 3. *Lesson taught.* *Interviewer - note names of all students present, and make seating diagram* 4. *Interviewer and teacher move to quiet location.* 5. *Collect lesson plan and audio tape or written responses to planning interview.*	B-21

PAGE 1A

Seating Diagram

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
LATTICE LESSON VIDEOTAPE (CONT'D)	7. *Informal chat - let teacher know:* a. *how much you appreciate her/his time and help* b. *indicate you are following a set order for interview* c. *ask at any time any questions* d. *want your honest reactions and thoughts to what we're asking you*	

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
TEACHER "SORT" TASK 15 Minutes Set of 3x5" cards - name of pupil on each Audiotape	*Interviewer directions:* 1. We're interested in the kinds of things that you noticed about pupils in the lesson you just taught. Could you take these cards and group the pupils, putting together the names of pupils that you think behaved or responded in similar ways during the lesson? You can have as many groups as you like, and as many names in a group as you like. You might even have a group of pupils that really didn't attract your attention very much during the lesson. I will be audiotaping your comments so that I don't have to bother taking notes. Any questions? *(Do not provide clues, but restate directions as necessary. Diagram each sort as the teacher lays it out.)* 2. *After teacher completes <u>each</u> sort ask:* a. How are the children in each group similar? Describe, please, each group's characteristics. b. How are the sub-groups different from each other? c. Can you think of another way that you might divide these pupils into sub-groups? Are there some other kinds of behavior that you noticed? Try putting them together in a different way. *d. Continue until teacher can't think of new groupings.*	B-24

Pupil Sort Diagrams

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
TEACHER "SORT" TASK (CONT'D)	3. *At end ask:* a. Were there any pupils that acted differently than usual today? 1. If so, who? (Name) 2. How were they different?	

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
TEACHER JUDGMENT TASK 15 Minutes? Videotape of other teachers teaching. Begin lattice lesson. Playback video equipment Audiotape recorder	*Interviewer:* I'd like to now show some short sequences of other teachers teaching a lattice lesson. In each case, this is the first time the teacher has introduced lattice work to the students shown. I will just be showing you short excerpts rather than entire 20 minute tape. After each of the sequences which are about 5 minutes in length, I will ask you a few questions regarding what you have observed this other teacher doing and particularly, what differences you see between the various lessons. Again, I will tape your answers to save my taking notes. Any questions? *1. Show sequence - (# in total). After each sequence ask:* a. What do you notice about this teacher's general approach to the lattice lesson? b. Which specific teaching procedures in this lesson seem particularly appropriate to you? 1. Why? c. Were there any specific teaching procedures in this lesson that seemed inappropriate to you? 1. Why?	B-27

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
TEACHER JUDGMENT TASK (CONT'D)	*2. After all sequences have been observed ask:* A. Now that you've seen several variations of the lattice lesson, do you have any preferences? 1. Was there one lesson that seemed more interesting or more successful to you than the others? 2. If so, why? B. Did you notice any differences in the way the various teachers reacted to pupil errors? 1. What were they? 2. Did any of these methods of responding seem more appropriate to you than any others? 3. Why? C. Did you notice any differences in the way the various teachers personalized the lesson or seemed to deal with pupil feelings? 1. What were they? 2. Did any of these methods seem more appropriate to you than others? 3. Why?	B-28

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
LESSON VARIATION 5 Minutes Audio recorder	*Interviewer says:* I'd like to ask you a few more questions and as before tape your answers. 1. You have seen several different variations on the lattice lesson. Can you think of some other different approaches that might be interesting to try? *(Probe for more)* 2. You've suggested one (or several) additional variations on the lattice lesson. How do you think pupil responses to this (these) approaches might differ from pupil responses to your lesson? ... from pupil responses to the lessons you saw on the tape? 3. If you were going to teach the lattice lesson again to another similar group of pupils? what changes would you make in the lesson? 4. We asked you to teach a 20-minute lesson on the lattice to 12 students who were varied in ability, so we set quite a few limits on the way you might proceed. If you were going to teach a math lesson <u>without</u> any of those restrictions, how would you structure the lesson?	B-29

(Studies B and C)

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
READING COMPREHENSION VIDEOTAPE 20 Minutes teaching 30 Minutes total time Videotape equipment 1 camera handled by techs. Bring 3 x 5 cards.	1. *Teachers given 4-page instruction sheet. Plan lesson suitable to their students. No prescribed lesson plan.* 2. *Instructions as follows:* You will be teaching this lesson in reading to a group of twelve of your pupils, who represent a cross-section of achievement levels. The lesson should be about twenty minutes long, and will be videotaped. We are trying to learn what teachers think about in planning or preparing lessons. As you get ready to teach this lesson, please make readable notes about what you expect to do in the lesson -- notes that would help an observer to understand your lesson more completely. These notes will be collected right after you have taught the lesson. 3. *20-minute lesson taught and videotaped* *Interviewer - note names and places of all students present. (Make seating diagram.) One name per 3" x 5" card.* *Make note of point where:* *1. first time student incorrectly responds* *2. second or third time teacher shifts activity* 4. *Interviewer and teacher move to quiet location.* 5. *Collect lesson plan and audio tape or written responses to the planning interview.*	B-30

PAGE 1A

Seating Diagram

B-31

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
READING COMPREHENSION VIDEOTAPE (CONT'D)	*7. Informal chat - let teacher know:* *a. how much you appreciate her/his time and help* *b. indicate you are following a set order for interview* *c. ask at any time any questions* *d. want your honest reactions and thoughts to what we're asking you* I really want your honest reactions.	

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
TEACHER "SORT" TASK 15 minutes Set of 3x5" cards - name of pupil on each Audiotape	*Interviewer directions:* 1. We're interested in the kinds of things that you noticed about pupils in the lesson you just taught. Could you take these cards and group the pupils, putting together the names of pupils that you think behaved or responded in similar ways during the lesson? You can have as many groups as you like, and as many names in a group as you like. You might even have a group of pupils that really didn't attract your attention very much during the lesson. I will be audiotaping your comments so that I don't have to bother taking notes. Any questions? *(Do not provide clues, but restate directions as necessary. Diagram each sort as the teacher lays it out.)*	B-33
	2. *After teacher completes each sort, ask:* a. How are the children in each group similar? Describe please each group's characteristics. Please provide a descriptive phrase. b. How are the sub-groups different from each other. c. Can you think of another way that you might divide these pupils into sub-groups? Are there some other kinds of behavior that you noticed? Try putting them together in a different way. *d. Continue until teacher can't think of new groupings.*	

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Pupil Sort Diagrams

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
TEACHER "SORT" TASK (CONT'D)	3. *At end ask:* a. Were there any pupils that acted differently than usual today? 1. If so, who? (Name) 2. How were they different?	

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
STIMULATED RECALL 30 Minutes Video playback unit Tape of teacher teaching own reading comprehension lesson Simultaneous view from teacher and pupil	*Interviewer says:* We're interested in what you were thinking while you were teaching this lesson -- especially what you were thinking as you decided what to do next at various points in the lesson. As we play the lesson back, please tell me to stop the tape whenever we reach a point where you were consciously saying to yourself, "Let's see, I think I'd better do this now," or "I guess I'll try doing this." I may stop the tape myself at a couple of points, but you should tell me to stop it whenever there is a point in the lesson where you know you made a specific decision about what to do next in the lesson. Questions? *(Keep tape recorder on throughout, to pick up point in lesson they're responding to, so we can categorize later.)* *When the teacher stops the tape, the interviewer will ask:* 1. What were you thinking at that point? 2. What did you notice that made you sort of stop and think? (If necessary, add: Was there anything pupils were doing that made you sort of stop and think?) 3. What did you decide to do? 4. Was there anything else you thought of doing at that point, but decided against? 5. What was it? *Interviewer stops tape at two points:* 1. *First time pupil gives incorrect answer to teacher question.* 2. *Second or third time teacher shifts activity in which pupils are engaged.* *Ask same questions (1-5) as above.*	B-36

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
STIMULATED RECALL (CONT'D)	*At the end of this task the interviewer will say:* We've talked about several different decisions that you made during this lesson. Are there two or three that you think were particularly important for the success of the lesson? Which ones were they?	

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
LOOKING BACK LOOKING AHEAD TASK 10 minutes Audio recorder Student scores on "quiz"	*Interviewer says:* Now I'd like to ask you a few more questions regarding the lesson you just taught. I'd like to know more about how you evaluate this lesson and any modifications you might plan. Think about the responses of your students to the lesson. (If there was written work, add: Take a few minutes please to look over these papers.) *Pause* Now I'd like to ask you a few questions. As before, I'll be taping your responses so that I don't have to take notes. 1. If you were planning to teach this lesson to another similar group of pupils, would you change your plans in any way? a. What changes would you make? b. Why? 2. If you were going to continue teaching this topic to the same group of pupils, what would you plan to do in the next lesson? a. Why? 3. We've talked about teaching this lesson again to another group, and teaching a follow-up lesson to the same group. a. Do you normally think about any of those possibilities right after you've finished teaching a lesson? b. What do you usually think about after you've taught a lesson?	B-38

TASK/TIME/EQUIPMENT	PROCEDURE	COMMENTS
LOOKING BACK LOOKING AHEAD TASK (CONT'D)	4. When you were planning this lesson, did you consider more than one way of doing it, before you settled on the procedure you used?	

Appendix C

PUPIL CONCEPTS OF TEACHING:

MATERIALS AND CODED RESPONSES

Part I.

Videotape Transcript of
"Peter's Problem"

"Peter's Problem"

T	OK....let me give you some problems. Here is the problem and the answer - and see if you can figure out what's happening. (writes on board: 13→→ = 15 42 ↑ = 52 21 ↘ = 12. All right....now let me give you one and you see if you can figure out the answer....(20 → = _____) Kevin?
Kevin	10
T	No...let me leave that there for you to work on, Kevin. (20 → =K) Let's try this one. (11 → =_____) Todd?
Todd	12
T	12 is right. Let's try this one. Kevin do you know yours?
Kevin	21
T	21 is right....very good Kevin. How about this one - one straight up? (1 ↑ =___) Peter?
Peter	2
T	2....no. What's the answer to this one, Peter? (1 → =_____)
Peter	2
T	That's 2. Look at that one (1↑ = P) and see if you can figure that one out. What's the answer to this one? (3 ↑ =_____) Who knows?
Veronica	13
T	13 is right. What's the answer to this one, Kevin? (14 ↑ =___)
Kevin	24
T	24....OK....what's the answer to this one? (42 =_____) Nettie?
Nettie	52
T	52 is right. Peter do you know yours? (1 ↑ = _____)
Peter	22

T	22...no, not quite....What's the answer to this one? (20↗ = ____) You've got to look at this and then you kind of have to look at that lattice and see what's happening. Ed?
Ed	32
T	32...no...close, but...no brass ring.
Ed	31
T	31....that's right. It just goes from 20 right here. It doesn't go shooting off. How about this one, 7 straight up? (7↑ =_____)
Todd	17
T	17...6 straight up? (6↑ =____)
Kevin	16
T	16...5 straight up? (5↑= _____)
Ed	10
T	5 straight up goes to 10?
Ed	15
T	15...OK...4 straight up? (4↑ =____)
Veronica	14
T	3 straight up? (3↑=____) Nettie?
Nettie	13
T	2 straight up, Veronica? (2↑ = ____)
Veronica	12
T	12...1 straight up, Peter?
Peter	11
T	11....good boy....

Part II.

Pupil Responses by Sub-Category
for Each Task

PUPIL CONCEPTS OF TEACHING: PART 1

CATEGORY	GRADE 2 HIGH	GRADE 2 MIDDLE	GRADE 2 LOW	GRADE 2 TOTAL	GRADE 5 HIGH	GRADE 5 MIDDLE	GRADE 5 LOW	GRADE 5 TOTAL	GRAND TOTALS
GENERAL APPROACH Instructional Strategy	1	1	2	4	0	1	0	1	5
Teacher vs Pupil Structure	1	0	1	2	2	0	2	4	6
Teacher Activity	0	0	0	0	0	2	0	2	2
Pupil Activity	2	0	0	2	0	0	0	0	2
Management/Control	6	3	1	10	10	5	8	23	33
Size of Group	1	0	0	1	0	0	0	0	1
MATERIALS Type of Materials	0	0	2	2	0	0	2	2	4
Pupil Use of Materials	0	1	0	1	0	0	1	1	2
COGNITIVE Teacher Directions	0	0	2	2	0	1	1	2	4
Teacher Selection of Pupils for Discussion	0	0	0	0	0	1	0	1	1
Teacher Explanation	1	1	0	2	2	3	2	7	9
Teacher Response to Right/ Wrong Answer	5	6	3	14	4	3	2	9	23
Content Focus	3	1	0	4	0	0	0	0	4
Other: Testing Procedures	1	2	0	3	3	0	0	3	6
Other: Record Keeping	0	2	0	2	0	2	0	2	4
AFFECTIVE Teacher Use of Positive Reinforcement	0	1	0	1	0	0	0	0	1
Teacher Attitude Toward Pupil	0	0	0	0	0	0	1	1	1
Other: Concern for Pupil	0	0	2	2	0	0	0	0	2
Total	21	18	13	52	21	18	19		110

PUPIL CONCEPTS OF TEACHING: PART 2

CATEGORY	GRADE 2 HIGH	GRADE 2 MIDDLE	GRADE 2 LOW	GRADE 2 TOTAL	GRADE 5 HIGH	GRADE 5 MIDDLE	GRADE 5 LOW	GRADE 5 TOTAL	GRAND TOTAL
GENERAL APPROACH Teacher Activity	0	4	4	8	1	0	2	3	11
MATERIALS Teacher Use of Materials	0	0	1	1	0	1	2	3	4
COGNITIVE Teacher Introcuction	1	0	0	1	0	1	0	1	2
Teacher Directions	1	1	2	4	1	1	0	2	6
Teacher Questioning	1	0	0	1	2	0	2	4	5
Teacher Selection of Pupils for Discussion	0	0	0	0	2	0	0	2	2
Teacher Explanation	0	0	0	0	1	0	0	1	1
Teacher Response to Right/ Wrong Answer	3	2	1	6	1	1	2	4	10
Data	1	4	1	6	1	2	1	4	10
Teacher Summary and Review	0	0	0	0	1	0	0	1	1
AFFECTIVE Teacher Enthusiasm	0	0	0	0	1	0	1	2	2
Teacher Use of Positive Reinforcement	0	0	0	0	0	0	1	1	1
PHYSICAL Teacher Movement	0	0	0	0	0	0	1	1	1
Other: Details	0	2	0	2	0	0	2	2	4
Total	7	13	9	29	11	6	14	31	60

PUPIL CONCEPTS OF TEACHING: PART 3

CATEGORY	GRADE 2 HIGH	GRADE 2 MIDDLE	GRADE 2 LOW	GRADE 2 TOTAL	GRADE 5 HIGH	GRADE 5 MIDDLE	GRADE 5 LOW	GRADE 2 TOTAL	GRAND TOTAL
GENERAL APPROACH Instructional Strategy	2	0	1	3	1	1	0	2	5
Teacher Activity	1	0	2	3	0	0	3	3	6
MATERIALS Preparation of Materials	0	0	0	0	0	1	0	1	1
Type of Materials	0	0	1	1	0	1	0	1	2
Teacher Use of Materials	0	1	0	1	0	1	0	1	2
Pupil Use of Materials	0	0	0	0	1	0	0	1	1
COGNITIVE Teacher Selection of Pupils for Discussion	2	1	1	2	1	1	1	3	7
Teacher Explanation	0	0	1	1	0	1	0	1	2
Teacher Response to Right/ Wrong Answer	3	2	1	6	4	1	2	7	13
Teacher Wait for Response	0	0	0	0	1	1	0	2	2
Data	3	3	1	7	2	3	2	7	14
Pacing/Time	0	0	0	0	0	1	0	1	1
Pupil Learning	0	1	0	1	1	1	0	2	3
Pupil Ability	0	1	0	1	0	0	0	0	1
Teacher Vocabulary	0	0	0		0	0	2	2	2
AFFECTIVE Teacher Use of Positive Reinforcement	1	0	0	1	0	0	0	0	1
Pupil Participation/ Attention	0	1	0	1	0	1	0	1	2
Pupil Behavior	0	0	0	0	1	0	0	1	1
Other: Teacher Image	0	0	0		0	0	1	1	1
PHYSICAL Visual/Auditory	0	0	1	1	0	0	0	0	1
Other: Details	2	0	0	2	1	0	0	1	3

PUPIL CONCEPTS OF TEACHING: PART 4

	GRADE 2 HIGH	GRADE 2 MIDDLE	GRADE 2 LOW	GRADE 2 TOTAL	GRADE 5 HIGH	GRADE 5 MIDDLE	GRADE 5 LOW	GRADE 5 TOTAL	GRAND TOTAL
GENERAL APPROACH Teacher Activity	1	1	0	2	1	0	1	2	4
Pupil Activity	0	0	0	0	1	0	0	1	1
Management/Control	0	0	0	0	1	0	0	1	1
MATERIALS Type of Materials	0	1	1	2	1	1	0	2	4
Teacher Use of Materials	2	0	0	2	1	1	2	4	6
Pupil Use of Materials	0	1	0	1	1	0	0	1	2
COGNITIVE Teacher Directions	1	0	0	1	2	0	0	2	3
Teacher Selection of Pupils for Discussion	1	1	1	3	0	3	1	4	7
Teacher Response to Right/Wrong Answer	0	0	0	0	1	0	0	1	1
Teacher Vocabulary	0	1	1	2	0	1	1	2	4
Content Focus	0	0	0	0	0	1	0	1	1
Data	1	1	0	2	0	1	0	1	3
PHYSICAL Classroom As a Whole	0	0	0	0	0	1	0	1	1
Other: Details	0	0	0	0	0	1	0	1	1
Total	6	6	3	15	9	10	5	24	39

Part III.

Student Categories

Student Categories

Grade 2 High

Things that happen at the same time:
Have art
Center time: record players, games, do anything you want; if not doing anything, sit down and she gives you something to do.

When you get something wrong:
When you get something wrong, she puts a check and we do it over.
When you give a wrong answer in talking, she goes on to the next person.

About arrows:
Putting up numbers and arrows.
Using slanting arrows.
Pointing the arrow different ways (directions).

Teacher writing:
Wrote down things we said.
Wrote down the patterns (we thought of them).

Kids writing:
We write stories about what we're doing.
We write stories about pictures.

If we need help:
If we need help, we raise our hands and she comes.
She tells us the way to do it, or gives us clues.

Teacher talking:
Said "Good boy."
Said names.

If we need help with a word:
If we need help with a word, she writes it in our dictionary.
Help with a word, she writes it on the board.

Learn about dinosaurs by art:
Learn about dinosaurs and penguins.
Have art.

Grade 2 Middle

Math:
Math--problem wrong, she does it on board for everyone.
Borrowing and carrying--she does it a long time and makes sure you know it.

Workbooks:
Workbooks--put books up so no one can copy you.
Tear out pages from workbooks and take them home; she staples them.

Grade 2 Middle, continued

Spelling:
Spelling: workbook, don't know word, she tells you.
Spelling test--she gives you sentences and says them over if you need it.

Writing down:
Wrote down our sentences.
Wrote really good questions in squares.

What we did with the sentences:
Making sentences.
Mixed sentences up.
Sentences were different.

"She":
She says words over if you forget them.
She brings us to cafeteria, so we won't run.
She doesn't take us to cafeteria; tells you not to run, but you do.

Grade 2 Low

No categories listed.

Grade 5 High

Giving them a chance, letting them figure it out:
Letting everybody have a chance.
Waiting for them to figure out problem--giving them a chance.
When he didn't know that it went down 10, she gave him a hint and time to figure it out.
When you can't find the answer to a question in reading or history, he tells you what page to look on, but makes you find the answer.
When you don't read directions carefully and aren't sure what to do, she points something out to you to help you figure it out.
On mistake, didn't write any answer, said "You can figure that out;" saved problem.

Talking over things:
Talking about certain things--sentences.
Talked over what we just did.
When you miss words in spelling she goes over the words with the whole class.

Picking problems to give kids clues:
When giving an assignment, she writes directions on board and explains how to do it--better than the directions in the book.
When Peter didn't know, he went on and gave him clues--like 2↑=12, so 1↑ would be 11.
When Peter said 1↑=2, he said 1→=?, so Peter knew 2 wasn't right.
Switched from ↑↓ to ↗↙ so they could learn how to do it both ways.

Grade 5 High,continued

Both about problems:
When giving an assignment, she writes directions on board and explains how to do it--better than the directions in the book.
When Peter said 1↑=2, he said 1→ =?, so Peter knew 2 wasn't right.

Keep kids quiet:
To keep class quiet so you can hear,
-bang ruler on desk
-yell (works sometimes)
-sit down and stare at class
-take things away from kids if they're playing
-send kids to office
-ask a question of kid who's not listening
-send bad kid to a mean teacher
-take away recess for a while
-lose lunch recess if you're messy.
When kids start work instead of listening to directions, he tells everybody to start work and the ones who were working ahead have to explain to the others how to do it--but they don't want to, so then they listen.
Always telling them to do something--so they wouldn't be fidgety.

Grade 5 Middle

Calling on kids and kids answering questions:
Peter didn't answer--he didn't understand. The teacher didn't help him.
Teacher didn't call on Peter--he might know the answer; teacher could call on him to find out.
Called on kids who didn't raise their hands.
Don't call on you when your hand is up.

What teachers have for kids to look at:
Diagonal and up and right arrows.
Up and down arrows, left and right arrows.
Put sentences in columns or in order.
Wrote down what we said.
In math, have sharts to keep for yourself on how well you did on each page.
Have math chart on wall with everyone's score; could see their imporovement.
Write on board and leave them on board so you can look at them later.
Chart with circles--bigger numbers.
Used a paper arrow, and it pointed to the answer on the "board."
Said "30 down," made it easier; other teacher just wrote it down.

Spelling:
In spelling, has you look up words you don't know in the dictionary.
When you misspell a word on a paper, she writes it in right and we copy it over a couple of times.

Grade 5 Middle, continued

Ways teachers make it easier to understand:
Said "30 down," made it easier; other teacher just wrote it down.
Called on kids slowly--gave them time to think about it.
Shows us how to do math problems, on board.
In spelling, has you look up words you don't know in the dictionary.

Ways teachers make it harder to understand:
(Give problems you haven't done)
(Changes what you have to copy before you're done)
Had lattice on board on took at--crooked.

Discipline--teaching what's right to do:
If you talk in a test (spelling) you get an F, then the class doesn't get a treat, so the kids listen in a test.
Have kids write something 100 times if they talk--helps them listen, but dumb thing to do.
When you don't want to do the work, she yells; then you do it; and later when you have a test, you know it.
If you talk in a movie, have to write a page about the movie.

Grade 5 Low

Talking:
Talking a lot.
He talked a lot--"ok".
Talked very loud--to get it through their thick head.
Talked a lot--"90 going down."

When you miss math problem:
If you miss a problem in math, the teacher gets mad at you and thinks you should know it.
If you miss math problem, he goes over it several times with you so you understand it; shows you sometimes, asks you sometimes

Restrictions; not helpful:
Principal is very strict if you get sent to office; makes you mad, not want to learn. Teachers send you there.
Teachers
-bench you
-send you out of the room
-put you in corner for a while
-make you write sentences 100 times
-punish a whole group if just some do wrong

Writing on chalkboard:
Writing on chalkboard.
Writing on butcher paper.
Writing numbers and arrows on the chalkboard.

Grade 5 Low, continued

Call names:
Saying people's names, for them to answer: Peter, Veronica, Kevin, Ed, Lisa, Todd.
Called names.

END